

.i.36.

emphasized, the reniform of a deep brown, and the orbicular, which is very small, reddish. The submarginal area of the forewing is occupied by a band of rusty colour which does not reach up to the apical angle. A spot of the same colour almost triangular, which sets out from the costa, runs parallel to this band for two-thirds of its length, on the upper portion of this spot one sees three small oblique whitish characters; finally one notices several other small marks of black colour between the costa and the first nervure. The surface of the hindwings is of a bluish-white with their inner margin reddish.

“The forewings of the female have the same markings as those of the male. but on a bistre ground, dotted with black-brown. The lower wings are of a bluish-white suffused with brown, and reddish on their margins.

“The underside of all wings is whitish suffused with brown in both sexes.

“The body of both sexes is the same colour as the wings. Antennae yellowish.”

Calberla, *Iris*. I. 229, pl. XII. fig. 10 (1888), gives a figure of the ♀ of *trux*, a badly executed one, which he allocates to the *lenticulosa* of Dup. All the markings up to the outer transverse line are very indistinct, which is marked by a double curved line of black points on the veins, between which are found white points; the whole wing is dusky yellowish black grey, the orbicular and reniform stigmata show as black spots, and below the latter towards the margin the wing is palest.

Duponchel's figures and description of *lenticulosa* show the race to be different from any other form. The very distinctive, quite separated, submarginal and costal fasciae are quite distinctive. Features such as the double dotted transverse postmedial line, show it to be a *trux* form.

These figures, 5 and 6, may be compared with Hübner's figures 768 and 723 respectively. But Duponchel's figures have the feeling of stiffness and fig 5 is irrorated with red particles, which one does not meet with, in any examples I know, in such a pronounced and general fashion.

Lhomme in his *Cat. Lep. Franc.* recently published, omits all mention of the *lenticulosa* of Dup.

ab. *terranea*, Frr. *Neu. Beitr.* I. 63, Züt. 178 (1833).

FIGS.—Frr. *l.c.* pl. 34: Warr. (Seitz) *Pal. Noct.* III. pl. 6: Culot *Noct.* I(1). pl. 14.

ORIG. DESCRIP.—“The present Noctuid is a discovery of recent time. Hübner has already figured it on figs. 723-725, but this figure is very different from mine. On Hübner's plate, which I have, the figure is very poorly coloured and not recognizable. I bought these Noctuae for two years running from an insect-collector from the Valaisian country, in both sexes, and give my figures from them, of which the male varies extraordinarily towards the Hübnerian figure. I had the opportunity of comparing about a dozen specimens, and assured myself that this Noctuid varied uncommonly. But all showed conformity in the marking, especially on the underside of all the wings. This Noctuid comes very near *N. segetis* of Hübner. The chief characteristic of the dark examples is the pale powdering running into white before and after the stigmata, and the white row of dots which is visible on

the wing veins of the forewing towards the zigzag line. The ♂ has pectinated, the ♀ threadlike antennae. In size the two sexes show a slight difference. The ♂ is smaller than the ♀. The triangular, strongly dark brown shade on the costa of the forewing towards the apex is characteristic. The stigmata, particularly the reniform and the claviform, are strongly marked and very dark coloured."

ab. *olivina*, Stdgr. *Cat. Lep.* ed. 3, 152 (1901).

FIGS.—Hb. *Samm. Noct.* 768, 769: Warr. (Seitz) *Pal. Noct.* III. pl. 6: Culot, *Noct.* I(1). pl. 14: Frr. *Beitr.* II. 62 (as *trux*).

ORIG. DESCRIP.—Gn. *Noct.* V. 279 (1882) var. A.—"I place under this variety all the examples with a pale grey or greenish ground, scantily powdered, markings partially obliterated, most frequently without claviform and orbicular stigmata, having the lower wings of an almost pure white in the ♂."

Stdgr. *l.c.* "Al. ant. viridescenti-vel violaceo-griseis."

The fig. 768 of Hübner is grey and not olive-grey, quite clearly a distinct form.

ab. *amasina*, Stdgr. *Cat. ed.* 3, 152 (1901).

FIGS.—Warr. (Seitz) *Pal. Noct.* III. pl. 6: Culot, *Noct.* I(1), pl. 14, figs. 5 ♂, 8 ♀.

ORIG. DESCRIP.—"Al. ant. sordide griseis, in ♀ obscurioribus, linea transversa vel fascia media (umbra) nigricante."

Hampson, *Cat. Lep. Phal.* IV. 246 (1903) "Forewing fuscous grey, darker in female, with the medial shade blackish."

ssp. *alpina*, Splr. *Schm. Eur.* I. 163 (1905).

FIG.—*l.c.* pl. 35, f. 14c.

ORIG. DESCRIP.—"In Wallis is found a reddish-brown *lunigera*-form which in no way differs from the ab. *rufescens*, Tutt (!!), and one may name this form *alpina*."

f. *conclamationis*, Trti. *Att. Soc. It. Sci. Nat.* LXIII. 71 (1924).

FIG.—*l.c.* pl. III. f. 12, 13.

ORIG. DESCRIP.—"Not larger than very small *exclamationis*, L., from which its uniform lutescent cretaceous ground colour without any scattered markings and its compressed claviform do not suffice to distinguish it; however, it has the antennae of the ♂ with much longer cilia at the base and the complete absence of the brown collar of the former." The female is darker. Cyrenaica.

f. *pseudolunigera*, Trti. *Att. Soc. It. Sci. nat.* LXIII. 71 (1924).

FIG.—*l.c.* pl. III. f. 10.

ORIG. DESCRIP.—"With black claviform and the orbicular spot clear and distinct." Cyrenaica.

ab. *rubrofusca*, Schaw. *Zeit. Oestr. Ver.* XVI. 35 (1931).

ORIG. DESCRIP.—"Forewing, head and thorax dark red brown." Corsica.

ssp. *subalba* (Corti) Draudt. *Seitz. Pal. Noct. Sup.* III. 51 (1933).

FIGS.—*l.c.* pl. 6c. 6d.

ORIG. DESCRIP.—“Considerably darker stigmata and pure white hindwings in the ♂.

Agrotis, Ochs. and Treit. (1816-25). Most authors. [*Rhyacia*, Hb. (1822) Warr.-Stz. : *Euxoa*, Hb., Hamp., Corti, Meyr.] *vestigialis*, Hufn. (1765) ; Rott. (1776).

Tutt, *Brit. Noct.* II. 16 (1892) : Barr. *Lep. Brit. Is.* III. 281. plt. 124 (1896) : *Stdgr. Cat.* III ed. 152. (1901) : Hamp. *Lep. Phal.* IV. 170 (1903) : Splr. *Schmett. Eur.* I. 164. plt. 35. 17 (1905) : South, *Moths. Brit. Is.* I. 202. plt. 104 (1907) : Warr.-Stz. *Pal. Noct.* III. 36. plt. 7i (1909) : Culot, *N. et. G.* I(1), 90. plt. 15. 8-9 (1909-13) : Corti, Seitz. *Pal. Lep. Supp.* III. 47.

Tutt took the *vestigialis*, Rott. (1776) as the type. Had it not been that Rott. had identified the unrecognizable description of Hufn. named *vestigialis*, the *valligera*, Schiff. *Verz.* (1775) would have been the name of the type, as assumed by many writers.

vestigialis, Hufn. *Berl. Mag.* II. (4), 422 (1765).

ORIG. DESCRIP.—“White-grey; the forewing powdered with brown, and with brown spots; the hindwings wholly white-grey.” A worthless description had it not been interpreted by Rott. *Naturf.* VIII. 107 (1776), a contemporary.

Illiger, *Verz.* 1800, points out that the *valligera*, Schiff. *Verz.* 80, is the *valligera*, Fab. *Ent. Sys.* III(2). 72, the *Bombyx clavis*, Esp., the *B. trigonalis*, Esp., and the *valligera*, Bork. IV. 551.

Fab., *Sys. Ent.* III. (2) 72, says that his *valligera* is that of the *Verz.* Schiff. p. 80.

Hübner's fig. 478 is the *valligera*, Bork., deep rich mahogany brown.

Frr. *Neu. Beitr.* I. plt. has 2 good dark figures, brown but not mahogany as Tutt says of *valligera*, Bork.

Godt. *Hist. Nat.* V. plt. 65, has 2 very good figures, the first the grey *vestigialis* ♂, the second a dark fuscous ♀ (*nigra*?).

Warr.-Seitz. *Pal. Noct.* III. plt. 7i give ♂ and ♀ figures very like those in Godt. Light ♂ and dark ♀.

Ernst. and Engr., *Pap. d'Eur.* VII. fig. 441., give four upper-side figures of different shades. 441g is very dark with hindwings wholly uniform dark brown somewhat lighter near the base. The figures can hardly be called good.

Barrett. *l.c.* plt. 124 gives six figures; 1 and 1a, ♂ and very dark ♀; 1b, has the ground colour tinged with yellow, a blotched dark reniform and hindwing with a much emphasized dark marginal band; 1c, has the claviform deep black and extended as a partial central band to the inner margin; 1e, is a dwarf hardly more than half the normal expanse with a pure white ground; 1d, like 1c but with lighter ground colour.

Bork. *Naturg.* IV. 552, notes that it has been identified with the *clavis* of Hufnagel in error, and that Esper has taken the brown and the whitish-grey forms as two separate species *clavis* and *trigonalis*, quite without foundation, since a series of the species will contain a continuous row of forms, from the darkest to the lightest.

Esper included the species and forms of it as a *Bombyx*, as did Haworth.

Of *signata*, Bdv., de Villers took one specimen in Alsace and that was subsequently destroyed.

Of the Variation Barrett says "Rather variable. In the male the ground colour is sometimes whitish drab, and in such specimens all the markings are occasionally obscure and indistinct, so that the forewings are nearly unicolorous, but in other cases the stigmata are all strongly marked, while the other markings are almost obliterated. Olive-brown specimens are sometimes as obscurely or as sharply marked, and frequently the black spot between the two upper stigmata is obliterated. The more reddish forms are commonly well-marked, showing the lines, stigmata, and hind-marginal wedges to great perfection, and frequently those specimens are of slightly larger size. In the female the range of variation in colour is quite as great; these are occasionally of a pale drab, but more often dark reddish brown or deep olive-brown sometimes clouded with blackish, especially towards the middle of the dorsal margin, in others richly clouded with reddish, while the pale oblique stripe comes out most conspicuously; the stigmata are large and very dark, in a deep brown stripe, and the hind-marginal wedges and clouds very sharply defined. Sometimes a dark cloud along the costa unites with the upper stigma, in other cases the subcostal region is conspicuously pale. The thorax varies in depth of colour in conformity with the forewings, and the hindwings in both sexes follow suit—from clear, pure white in the palest males to pale greyish brown in the darkest; and in the females from pale grey, varied with white, to dark grey. Occasionally in both sexes the forewings are tinged with grey rather than brown. There is also a tendency to local variation, a peculiar faint shade of umbreous, for instance, in Lancashire specimens, differing a little from the various shades of reddish. All the variations melt insensibly into each other; it appears impossible to draw any definite lines of variation; yet the species has been loaded with varietal or synonymic names, which seem to have no definite application and to be of little importance."

The Names and Forms to be dealt with are as follow:—

- vestigialis*, Hufn. (1765) *Berl. Mag.* II. 422.—Rott. (1776) *Naturf.* VIII. 107.
valligera, Schiff. (1775) *Verz.* 80.
f. trigonalis, Esp. (1782) *Schm. Abbild.* III. 352, pl. 76, 6.
f. clavis, Esp. (1782) *l.c.* 319, pl. 63, 5.
 [*valligera*, Fab. (1787) *Mant.* II. 158.]
clavifera, de Vill. (1789) *Linn. Ent.* II. 174.
f. valligera, Brk. (1792) *Naturg.* IV. 551.
f. valligera, Hb. (1802) *Samml. Noct.* 150.
f. sagittifera, Haw. (1803) *Lep. Brit.* 118.
ab. signata, Bdv. (1840) *Ind. Meth.* No. 855.
ab. obsoleta, Tutt (1892) *Brit. Noct.* II. 19.
ab. brunneo-obsoleta, Tutt (1892) *l.c.* 19.
ab. nigra, Tutt (1892) *l.c.* 19.
ab. lineolata, Tutt (1892) *l.c.* 20.
ab. nigra-obsoleta, Tutt (1892), *l.c.* 18.

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ab. *albidior*, Ptrsn. *Lep. Fn. Est.* I. 166 (1902): Culot (1909-13) *N. et G.* I (1). 90.

ab. *pallida*, Splr. (1905) *Schm. Eur.* I. 164.

ssp. *extersa*, Slast. (1911) *Hor. Ross.* XL. 71.

ab. *olivacea*, Hrtg. (1924) *Ent. Rund.* XLI. 45.

ab. *violascens*, Hydm. (1929) *Int. Ent. Zt.* XXII. 425.

ab. *pseudochretieni*, Hydm. (1929) *l.c.*

ssp. *amurensis*, Stdgr. ()

ab. *angustipennis*, Bart. ()

Tutt dealt with A. Whitish grey forms—(1) With distinct markings (*valligera*, Fb.), *vestigialis*, Rott. (2) With the wedge marks extended to outer margin, *lineolata*, Tutt. (3) *signata*, with more or less obsolete markings.

B. Greyish fuscous forms—(1) With distinct markings, *sagittifera*. (2) With more or less obsolete markings, *trigonalis*.

C. Pale reddish ochreous form—(1) With distinct markings, *clavis*.

D. Brownish or reddish brown forms—(1) With distinct markings, *valligera*, Bork. (2) With basal half brown, *valligera*, Hb. (3) With more or less obsolete markings, *brunnea-obsoleta*.

E. Blackish fuscous forms—(1) With distinct markings, *nigra* (var. B. Guen.). (2) With more or less obsolete markings, *nigra-obsoleta*.

clavifera, de Vill. *Linn. Ent.* II. 174 (1789)

ORIG. DESCRIP.—“Alis purpurascens, inferioribus albis, stigmatibus fascia nigra junctis.” “Alae superiores fasciis duabus nigris, quarum una inaequalis stigmata gerit et quasi clavem representat, altera saepe ovalis prope superius stigma. Insuper ante marginem plurae maculae nigrae, lanceolatae, transversae positae. Alae inferiores infra albae aut fuscae.”

Hübner's fig. 150 (Tutt quoted 170 in error II. 19) is not typical and hence its name *valligera* designates a form. The name *valligera* having been already used by Borkhausen is not available for Hübner's different form f. 150, and we here substitute **pseudovalligera** to designate the brownish and reddish grey forms with distinct markings and with basal half of forewings brown.

ab. *albidior* Petersen, *Lep. Fn. Est.* I. p. 166 (1902).

ORIG. DESCRIP.—“Many examples have a whitish ground colour.”

ab. *pallida*, Splr. *Schm. Eur.* I. 164 (1905).

ORIG. DESCRIP.—“Wholly paler, yellowish coloured and has more whitish hindwings.” S. Russia.

ab. *extersa*, Slastshevsky, *Hor. Ross.* XL. 71 (1911).

ORIG. DESCRIP.—“A uniform brownish grey, while no trace of the stigmata can be seen.”

“Alis ant. fere unicoloribus, strigis transversis ambabus lineaque undulata vix pronuntiatis.”

“The species varies very much; the usually sharp markings become more or less obsolete. This most extreme aberration in this direction I describe under the name *extersa*.”

"The f.w. are almost unicolorous, brownish grey, beyond the outer transverse line in the centre paler. The two transverse lines are very indistinct, the waved line wholly obsolete, the claviform only indicated by a slight darkening. The whole cell 1b between the two transverse lines very faint, the position of the orbicular somewhat more distinctly darkened. Of the stigma itself no trace is observable." Warschau Dist.

Heydemann asks whether this really belongs to *vestigialis*.

ab. *olivacea*, Hartig. *Ent. Rund.* XLI. 45 (1924).

ORIG. DESCRIP.—"Differs from *albidior* by its olive-coloured ground. Only the upper half portion of the claviform on the forewing becomes whitish. This stigma forms a wide olive-coloured spot to the inner margin, which unites the inner and middle transverse bands. The marginal and costal areas and the reniform are darkened olive colour. The orbicular whitish." S. Tyrol.

ab. *violascens*, Heydem. *Int. Ent. Zt.* XXII. 430 (1929).

FIG.—*l.c.* fig. 9.

ORIG. DESCRIP.—"Inner margin and marginal areas and especially the costa are bright violet-rose tinted on the pale brown ground. Sometimes this appears only on the costa. Observed only on the ♂♂."—Pomerania, and Mecklenburg.

ab. *pseudochretieni*, Heydm. *Int. Ent. Zt.* XXII. 430 (1929).

FIGS.—*l.c.* figs. 10, 11, 12.

ORIG. DESCRIP.—"Diagnosed by the complete absence of the orbicular stigma." As in fig. 10 "in some examples there exists a black spot more or less effaced as a remnant of the obsolete orbicular." S. Tyrol.

Specimens with "somewhat narrower wings" which may occur anywhere have been named *angustipennis*, Bart. (Seitz.)

Specimens which are "predominantly dark, blackish often with dark costa and distinct dark transverse lines from the Apfel Mts. and Kentei are named ab. *amurensis*, Stdgr. (Seitz.)

The *tritici*—*cursoria*—*obelisca*—*aquilina*—*nigricans* Group.

Tutt devoted nearly 40 pages of his volume II. to the consideration of the species in this Group, the members of which are so extremely variant, that it has more than once been suggested that they represent but one very variable, widely distributed species. This view was particularly advanced in the *Jahrb. Nassau. Ver. Naturk.*, 1880-81, and referred to in the *E.M.M.* Vol. XIX. by Warren of Warr.-Seitz.

Tutt went into considerable detail to show, most entomologists thought conclusively, that each of the above names, except *aquilina*, represents a distinct species. 1892.

It is only right, however, to point out that F. N. Pierce, in *Genitalia of the Noctuidae*, p. 53, 1909, made the following remarks, "This Group is an example of failure of the genitalia for specific

classification, the points of difference being very minute. In Prof. Smith's work on the *Agrotidae*, he calls this group *Carneades*, and records some 120 species, mostly with the harpes so similar that he, in some cases, makes one figure do for 13 species."

Dr. Cockayne says (*in lit.*) "The larvae of *cursoria* is very different from that of the others."

Agrotis, Ochs. and Treit. (1816-25) most authors, [*Euwoa*, Hb. (1822) Hamp., Meyr. Corti.] *obelisca*, Schiff. (1775).

Tutt took the figure 123 of Hübner as the type. This was not so. A short and inadequate description of the species under the name *obelisca* was given by Schiffermüller, *Verz.* 80 (1775).

ORIG. DESCRIPT.--"Lepidopteron with pale or distinct orbicular and reniform stigmata. A fawn coloured, pale, rounded Noctua."

This was expanded by Schrank, in *Fuess. Neu. Mag.* II. 217 (1785).

"The size of *N. segetum*, the forewing reddish, dark brown, glossy; the reniform and the orbicular whitish; across the reniform is placed a narrow blackish equal-sided triangle, which the orbicular surmounts without being its colour (hence the name *obelisca*); to the middle of the ground lies another narrow streak, which runs out to beyond a third of the wing. The hindwing whitish, with brownish veins. Glossy."

Schrank says that the *obelisca* of Borkhausen is not that of the *Verz.* He also says that the *stichica*, Bork. has a great similarity with it.

Illiger, *Verz.* (1801), p. 258, agrees with these remarks, which he quotes.

Tutt, *Brit. Noct.* II. 28 (1892): *Barr. Lep. Br. I.* III. 353, pl. 133 (1896): *Stdgr. Cat.* IIIed. 151 (1901): *Hamp. Lep. Phal.* IV. 182 (1903): *Splr. Schm. Eur.* I. 161, pl. 35 (1905): *South, Moths Br. I.* I. 208, pl. 106 (1907): *Warr. Stz. Pal. Noct.* III. 26, pl. 5hi, 6a (1909): *Culot, N. et G.* I(1). 81, pl. 13, f. 9-11 (1909-13): *Corti-Stz. Pal. Noct. Supp.* III. 28 (1931).

It seems to be rather hopeless to unravel the tangle of names which have been used in these most variable and confusing species in this group of *Agrotids*. An endeavour has been made to give the various opinions of those entomologists who have considered the subject, and then to give the remarks of the late Dr. Corti, whose knowledge of the *Agrotidae* was unrivalled.

Tutt recorded 2 forms *ruris*: *ruris*, Hb. and *ruris*, Gn., and again 2 forms *villiersii*: *villiersii*, Hb.-Gy. and *villiersii*, Gn. The second use in each case cannot stand. In the case of *ruris*, Gn.; although placing *ruris* to Hb., Tutt completely ignored a description of the figure, "Reddish brown, with greyish costa," and gave his own description, "Reddish grey, with no costal streak." I rename it **ruris-guenèei**.

Tutt dealt with (1) the Hübner figure 124 as type. (2) The reddish-brown with grey costa, *ruris*, Hb. (3) Reddish grey, with no costal streak, *ruris*, Gn. (4) Deep violet brown, with white costa, *plectoides*,

Gn. (5) Pale purplish-grey, with yellow costa, *villiersii*, H.-Gyr. (6) Greyish-ash, with an ochreous tinge and almost unicolorous costa, *villiersii*, Gn. (7) Blackish-vinous, with costa whitish, *hastifera*, Donz. and (8) The form finely dusted with grey and pale, *grisea*, Tutt.

Tutt placed the *pratricula*, Bork. to this species. Subsequent authors have placed this form to *tritici*, and have placed the *pratricula*, Hb. to *obelisca*, e.g., Hamp., Warr.-Stz.

Of Esper's *molothina*, Werneberg says = *ruris*, Tr. var. "Was placed to *velum* by H.-S. with a ?, but did not agree with it. Esper's *molothina* was found at Frankfurt a. M. and belonged to Gering's collection; it is none other than one of the numerous varieties of *ruris*, Tr. The antennae are figured with too strong pectination, an error which often occurs in Esper's figures. In the description it was remarked on thus: The shaft is boldly stout and goes gradually to a fine point. The two rows of side fibres are also very stout and are directed perpendicular from the shaft. Just so are the antennae of *ruris*. The figure of the insect is like figure 535 in H.-S."

Illiger says, *l.c.* that Borkhausen's, *Naturg.* IV. 500, *obelisca* is not that of the Vienna List (Schiff.), but probably the *stichica*, Bork. is *obelisca* to which it has the greatest similarity.

Haw. *Lep. Brit.* erred in copying Hübner as *obeliscata*, p. 222.

The fig. 443 of Ernst. and Engr. of *obelisca* is too light and too large, otherwise it portrays the species.

The figure in View. *Tabell.* II. 60, plt. 3, 2, does not show the ordinary form of what we know as *obelisca* but probably designates the form *ruris*, Hb.

Owing to the uncertainty of the date of the Hübner-Geyer plates, authors have taken different dates for priority. *Stdgr. Cat.* 151 (1901) and *Hamp. Lep. Phal.* IV. 182 (1903), both treat *villiersii* under the author Gn., and omit to note that Hb. had described a different form under the same name. Both *Stdgr.* and *Hamp.* treat *hastifera*, Donz. as a true species. *Hamp.* treats *pratricula*, Hb. as a synonym. *Stdgr.* places *fictilis*, Hb. as a synonym of *villiersii*, Gn.

Hübner's fig. 123. *Saml. Noct.* (1802), taken by Tutt as the type, is of a most unusual deep dull red coloration with no great emphasis of the costal streak which is light ochreous. I do not know this form. It appears to be a ♂ but the antennae are too thin. H.-S. describes this form with much red suffusion. Fig. 416 *ruris* (1808), is a more uniform ground, with an average emphasis of the costal streak; ♂, it is brown and not red.

Fig. 710 *fictilis*, Hb.-Gyr. (1826-8) is a bad figure for any *obelisca* form. A very large ♂.

Figs. 869-870 *villiersii*, Hb.-Gy. (1834-41) are 2 very large *obelisca*, the former generally very pale ochreous ground, the latter a slightly browned grey ground, the markings of both being clearly defined and definite. The ♂ has well pectinated antennae. H.-S. says these 2 figs. are copied from the *Ann. Soc. ent. Fr.* (1837).

An examination of the figs. 567 and 710 *fictilis* of Hb. suggests *tritici* very strongly. The submarginal area arrangement of marking is never found in *obelisca*, whereas it occurs in forms of *tritici* or the *aquilina* form.

In the case of *villiersii*, Hb.-Gey. (1834-41), *Splr.* notes that the latter figures were copied from Gn.'s fig. in the French *Ann.* of 1837,

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thus showing that Gn. was the prior user of the name *villiersii*. But as the quite diverse descriptions of the forms emphasize a strong distinction, it here also necessitates a distinctive name and we suggest that the Hb.-Gey. figure be called **villiersii-geyeri**, the "Pale purplish grey, with yellow costa," while Gn's. description, "Greyish-ash with an ochreous tinge, and almost unicolorous costa," form, retains the simple name *villiersii*.

Steph. *Ill.* II. 124, treats *obelisca* and *ruris* as two separate closely allied species. He refers to the extensive variation of these two forms; the stigmata of the latter sometimes nearly obsolete.

Godart, *Hist. Nat.* V. 124 refers to an American insect which in no way differs from the *obelisca* of Europe. (This is probably the species subsequently named *obeliscoides* by Gn.) On pl. LXIV. f. 3, is a good figure of a form with a wide dull white costal streak from the base to a point not far from the costa, much more emphasized than usual. Godt. considers that the *B. molothina*, Esper, belongs to *aquilina* and not here.

H.-S. *Bearb.* II. figs. 529-530 give ♂ and ♀. The h.w. of the ♂ has too great a contrast between the disc and bordering band and the ♀ seems of too dark a brown. Fig. 532 is a ♂, very red. Figs. 534-535 *ruris*, are much too variegated for this form. 534 is a bad figure. In fact all the figs. of this species of H.-S. are unusually poor.

Gn. *Noct.* I. (V.) 291, says that Godt. pl. 64, 3 is very bad, that the *obelisca*, Steph. is the *prati(n)cola*, Hb. 567 ♀.

Werneb. says, *Beitrag.* II. 117, that fig. 443 of Ernst and Engr. Vol. VII. is a very large *obelisca*, is nearest to fig. 532 of H.-S., but is lighter in colour, similar to *valligera*. His remarks are quite correct.

Werneb. says, *l.c.*, of figs. 444a ♂ and b ♀ that the ♂ is like the fig. 535 in H.-S. The ♀ with red-yellow head and neck and white transverse lines on the forewing was unknown to him. *ruris* fig. 446b is a var. of *ruris* 444a ♂.

Werneb. *l.c.* II. 178, says of Bork. IV. p. 553 *pratincola* that Treit. and H.-S. both cite this description to *tritici*, but the whole description particularly the size given and the similarity with *valligera* denotes that he himself held it to be *obelisca*.

Spuler, *Schn. Eur.* I. 161. pl. 35 (1905), gives 2 good figures, *obelisca* and *ruris*, and figures *hastifera* as a true species. He states that since Hb.-Gey's. figs. 869-70 were copies of Gn's figures, Tutt's statements are in error. But in view of the quite diverse descriptions by the two authors, one must assume that there are two forms, confused under the same name.

Culot, *N. et. G.* pl. 13 (1909-13) gives 4 figures. 9-10 ♂ and ♀ *obelisca*, good but do not show sufficient variation in markings and the pale streak is not emphasized sufficiently. 11 is the pale *villiersii*. 12 is a good figure of *hastifera* (which Culot treats as good species) and corresponds closely to our British form, a similarity recognized by Tutt.

Warr.-Stz. *Noct.* III. 27 (1909) treats *praticola*, Hb. and *declarans*, Wlkr. as synonyms; deals with *fictilis*, Hb. (710), *ruris*, Hb., *villiersii*, Gn., ab. *plectoides*, Gn. and describes the Ural Mt. form *carbonis*. He treats *hastifera*, Donz. as a true species. If Tutt's statement is correct that the British examples agree very closely with this form rather than with Hübner's *obelisca*, a further change of name is necessitated.

On plt. 5 the figures are, 5*h. hastifera*, *obelisca* ♂ and ♀; 5*i. villiersii*, ♂ and ♀, *ruris*, *fictilis*: 6*a. carbonis*. The basal colour of the whole plate is brown and the figures are more or less poor in colour except the last. The marking appears to be correct in design.

Of the Variation Barrett says:—"Very little variable, and this mainly in the shade of colour of the forewings, which in some specimens is of a paler purple-brown, in others, but more rarely, pale slate-brown; in some examples the first transverse line is complete, dividing the pale subcostal stripe." Isle of Wight specimens are generally of a greyer tendency.

Barrett reports "A specimen in which the first transverse line is very distinctly shown and more perpendicularly placed than usual."

The Names and Forms to be considered are:—

- obelisca*, Schiff. (1775) *Verz.* 80.
- molothina*, Esp. (1782) *Abbild.* III. 33, plt. 85, 1.
- quadrula*, de Vill. (1789) *Ent. Linn.* II. 286.
- [*pratincola*, Bork. (1792) *Naturg.* IV. 553.]
- obelisca*, Hb. (1802) *Samml. Noct.* 123.
- praticola*, Hb. (1808-18) *l.c.* 567.
- ? *ssp. fictilis*, Hb.-G. (1825-28) *l.c.* 710.
- f. villiersii*, Hb.-G. (1834-41) *l.c.* 869. [= *villiersii-geyeri*.]
- f. ruris*, Hb. (1827) *l.c.* 416.
- f. villiersii*, Gn. (1837) *Ann. Soc. ent. Fr.* 173, plt. VIII. fig. 2.
- [*obelisca*, H.-S. (1845) *Bearb.* II. 344.]
- ? *ssp. hastifera*, Donz. (1847) *Ann. Soc. ent. Fr.* 525.
- ssp. plectoides*, Gn. (1852) *Hist. Nat. Noct.* V. 292.
- f. ruris*, Gn. (1852) *l.c.* V. 291-2. [*ruris-guenéei*.]
- ssp. declarens*, Walk. (1856) *Lep. Het.* X. 347.
- ab. grisea*, Tutt (1892) *Brit. Noct.* II. 31. Barrett. *Lep. Br. Is.* plt. 133.
- r. carbonis*, Warr.-Seitz. (1909) *Pal. Noct.* III. 27. plt. 5*hi.* 6*a.*
- ab. badia*, Gillm. (1910) *Int. Ent. Zt.* IV. 145.
- ssp. corsicola*, Corti. (1931) *Seitz. Pal. Noct. Supp.* III. 29. plt. 31*i.*
- r. stephensii*, Heydmn (1933) *Int. Ent. Zt.* XXVII. 247. South M. Br. I. I. plt. 106. fig. 11 (1907).

Corti-Seitz. *Noct.* III. *Sup.* 28 (1931) calls *obelisca* "a difficult group of forms." He says that "the *ab. fictilis*, Hb. 710, illustrated in the main volume (III. 5*i.*) is no *obelisca* form." Also "The *ab. ruris*, Hb. illustrated on the same plate is not an *obelisca*. The *ab. villiersii*, Gn. is not an *obelisca* form." He goes on to say that "*obelisca* does not vary greatly"; "it is often very difficult to separate certain forms from *tritici*, *aquilina*, etc."; "the *ab. carbonis*, Warr., is a form of *hastifera*, Donz."

Corti, *l.c.*, confirmed the view of Warr. that *hastifera*, Donz. was a sp.; he treats *aquilina*, Schiff., as a true species; *ruris*, Hb., as a form of *A. temera*, Hb.; *villiersii*, Gn. (not Hb.) as a form of *temera*; and *fictilis*, Hb. (fig. 710) as a form of *A. temera*, but not *fictilis*, Hb. (fig. 479) which he places to *A. aquilina*, Schiff. = *hübneri*, Bdv.

quadrula, de Vill. *Linn. Ent.* II. 286 (1789).

ORIG. DESCRIP.—“*Alis deflexis, subincarnatogriseis, maculis quadratis nigris.*”

“*Alae superiores incarnatofusca. Maculae ordinariae quadratae, nigrae, albido cinctae, praeter puncta tria nigra versus basin et aliud inter stigma superius marginemque exteriorem. Pars postica ejusdem alae obscurior videtur. Thorax hirsutus, vellere fusco. Omnes alae subtus exalbidae, atomis fuscis irroratae.*”

Tutt placed *praticola*, Hb. 567 (1808-18) to *tritici* although Gn. placed it to *obelisca*. Most recent authors place it to *obelisca*.

ORIGINAL DESCRIP.—“The anterior wings are of a brownish grey colour with a slight reddish tinge, with an abbreviated, followed by a complete, double, transverse, basal line; claviform outlined in black, reniform and orbicular outlined in pale with a dark quadrate spot between them; a pale transverse elbowed line (beyond reniform) outlined in black (both sides), hind margin clouded with darker. Posterior wings whitish, outer margin dark grey.” Tutt, *Brit. Noct.* II. p. 54. We would add that the part basal and succeeding wide lines each start from two deep black marks on the costa, and that the reniform (on the inside) and the orbicular (on the outer side) are partially emphasized by deep black edging.

ab. *declarens*, Walk. *Cat. Het.* X. 347 (1856).

“♂. Pallide cervina; antennae subpectinatae; abdomen albido-testaceum; tarsi nigro fasciati; alae anticae lineis transversis indistinctis undulatis fuscis, margine exteriore cinereo nebulosa, orbiculari et reniformi ex parte nigro marginatis, hac magna obliqua subelliptica; posticae albae, marginibus subcinereis.”

“♂ pale fawn-colour. Antennae slightly pectinated. Abdomen whitish testaceous. Tarsi with black bands. Forewings with very indistinct, transverse, undulating, brown lines; a greyish tinge along the exterior border; orbicular and reniform with incomplete black borders, the former large, oblique, subelliptical. Hindwings white; borders slightly greyish.”

ab. *carbonis*, Warr.-Stz. *Pal. Noct.* III. 27 (1909).

FIG.—plt. 6a.

ORIG. DESCRIP.—“Has the ground colour purplish black, with the costal streak and upper stigmata pale and the cell deep black; all the lines indistinct.” Uralsk.

ab. *badia*, Gillm. *Int. Ent. Zt.* IV. 145 (1910).

ORIG. DESCRIP.—“Forewings, head and thorax dark red-brown in colour as in *A. segnum**; abdomen and hindwings yellowish brown, the former darker than the latter. Basal streak on the forewing wanting; orbicular and reniform stigmata somewhat a little lighter, the former on the outside, the latter on both outer and inner side, marked with fine black (in the direction of the base from the margin); the former open outwardly, the latter both inwardly and outwardly; between the two stigmata a black brown square (the pyramidal apex of the orbicular is

* Now *sigma*, Schiff.

wanting). The median vein not white but of the ground colour. The claviform thin and longish emphasized with black, not very distinctly, the inner very indistinct transverse line upright. The outer transverse lines doubled, on the inner side somewhat lighter and therefore against the dark red-brown ground colour, standing out as a red-brown band. The angulated line obsolescent and only represented by 6 yellow-brown little spots before the darker outer part of the marginal area. The dark fringes are separated from the outer margin by a fine light yellow slightly waved marginal line. The costa of the forewing not becoming light but the same dark red-brown. Hindwings yellowish white, strongly darkened by brown powdering, especially the veins. Fringes yellow-brown, separated from the outer margin by a yellow border line, The cross vein of the hindwings sickle-like darkened." Rheinpfalz.

ssp. *corsicola*, Corti. Seitz. *Pal. Noct. Supp.* III. 29 (1931).

FIG.—*l.c.* pl. 3li.

ORIG. DESCRIP.—“A very nice local race occurs in Corsica concurrently with the type form. Generally smaller and much more brightly marked, colour more inclined to be grey to grey-brown, the light transverse bands well developed. Costa and stigmata a delicate yellowish, like the transverse bands, subterminal line absent or very faint, outer marginal area very dusky.” July. Schawerda suspects this form to be a separate species.

f. *stephensii*, Heydm. *Int. ent. Zt.* XXVII. 247 (1933).

FIG.—South, *M. Br. I. I.* pl. 106. f. 11 (1907).

ORIG. DESCRIP.—“The males throughout similar to the figure given by South, only they are still smaller as in our native *tritici*. The ground colour of the forewings is not red-brown as in the inland *obelisca*, but grey-black with reddish undertone as in *c-nigrum*. The female is without this undertone, dull grey-brown. Transitions up to only a little less dark than *obelisca* appear to occur. The paleness of the costa, as in that, up to the reniform, which like the orbicular becomes yellow-white, is emphasized on the outside, finely by black and on the innerside filled in with grey. Marginal area blackish. Hindwings quite agree with South's figure, whiter than the Vienna *obelisca* and much less dark grey powdered. Those of the ♀ are wholly dark grey, not brown-grey, as in the typical form.” Schleswig-Holstein.

Agrotis, Ochs. and Treit. (1816-25); most authors [*Euxoa*, Hb. (1822) Hamp; Warr.-Stz; Corti-Stz.] *nigricans*, L.

Tutt, *Brit. Noct.* II. 32 (1892); Barrett. *Lep. Br. I.* III. 331. pl. 130 (1896); Stdgr. *Cat. III*ed. 149 (1901); Hamp. *Lep. Phal.* IV. 249 (1903); Splr. *Schm. Eur.* I. 160. pl. 35 (1905); South. *Moths Br. I.* I. 207. pl. 106 (1907); Warr.-Stz. *Pal. Noct.* III. 30. pl. 6h. (1909); Culot. *N. et G.* I(1). pl. 12 (1909-13); Corti.-Stz. *Pal. Noct. Supp.* III. 32 (1932).

Barrett has 9 figs.; Spuler has 1 fig.; South has 2 figs.; Warr.-Stz. 2 figs.; Culot 2 figs. All differing.

15.iv.36.

Esper. IV. pl. 135. 2-3. ♂ and ♀. Tutt was correct in his summary of the ♂ "reddish fuscous," with paler shade of stigmata, but the ♀ should be noted as having very pale ringed stigmata and conspicuous small pale blotches along the outer margin (not sagittate.) Bork. suggests the latter may be *xanthographa* (IV. 470). Esper. *l.c.* pl. 107 (labelled *pinastri*) is *nigricans* see *l.c.* p. 175 note. This figure is recognizable.

Treit. *Schmett.* V(1) (1825) treats *fumosa*, Hb., *fuliginea*, Hb., *carbonea*, Hb., *nigricans*, L., *rubricans*, Esp., as one species.

A very dull species with no markings of sufficient prominence to be given as characteristic. The extensive variation of the species has been that, examples here and there, which have had some character emphasized, have received names, with the result that we have a large number of named forms most difficult to determine, and different authors have used the same name for different varieties. For instance, *fumosa* has been used by Fab., Haw., Hb. and Godt. for different forms, (see later); and Warr.-Seitz. has named 2 forms *fumata* and *fumida* respectively; while Godt. has used *fuliginea* and Hüb. *fuliginea*, in each case depicting different forms. (See later.)

nigricans in Fab. *Ent. Sys. Emend.* III(2), 115. 346 (Schiff. *Verz.* 81. 19).

"*Alis deflexis nigricantibus: stigmatibus ordinariis pallidioribus.*
L. *Fn. Swec.* 1220."

"*Puncta aliquot minutissima ad marginem crassiorem.*"

fumosa, in Fab. *Ent. Sys. Emend.* III(2). 115. 348 (Schiff. *Verz.* 81. 18).

"*Alis deflexis nigricantibus; striga-postica punctorum alborum.*"

"*Nimis N. nigricans affinis. Differt tantum striga postica punctorum cuspidatorum alborum. Corpus totum nigricans.*"

Of the Variation Barrett says—"Variation in this species, in spite of the obscurity of its markings, is very considerable: in the ground colour especially—to umbreous, clay-red, purple-red, reddish-brown, pale brown and pale purple-brown, in the southern and eastern counties and in the fen districts; to blackish with yellow reniform stigma, in the north and north-west; and to almost jet black in Ireland. In some instances, irrespective of darker or lighter colour, the markings become distinct, and are even added to, a black spot preceding the orbicular stigma, and a square black or brown blotch occupying the space between that and the reniform stigma, is more distinctly yellow or is quite of the ground colour; in which last case all the markings are usually obliterated, leaving the wings unicolorous, or mottled with faintest possible black streaks. Of these the dull black or black-brown forms, with yellowish edging to one or both stigmata, were formerly looked upon as a distinct species under the name of *A. fumosa*; while those of more reddish colour, with the interspaces of the discal cell black, appear to have been known as *A. obeliscata*; and light red or clay-coloured specimens without the black interstigmatic spots as *A. ruris*. Another form of very dark purple-brown colouring, but the transverse lines and stigmata all yellowish, and the former rather spread and clouded, was known as *A. dubia*. A still more extreme form in which the yellowish colour runs in slender longitudinal lines is probably what was known as *A. marshallana*,

though this is not so certain; but the identity of all as one species has long been recognized, and all are so inextricably blended together by every shade of intermediate variation, that even as varietal names the value of these designations is doubtful. The last form appears to be the most rare."

Barrett reports a specimen "Having the purplish front margin of the forewings as in *A. ravidata* which it curiously resembles."

"Another which has before the hind-margin a distinct row of short black wedges."

"A rich deep black, with the reniform stigma edged with yellowish, but the other markings very indistinct; its hindwings are not unusually dark." Howth near Dublin.

"The more brightly marked forms seem to preponderate in the Cambridge Fen district, but in most localities the dull obscurely marked varieties are in an immense majority."

Barrett's description of *marshallana* indicated above is quite different from both Westwood and Humph.'s figure and from their description; in neither is there any suggestion of radiation. In the figure there is no trace of "yellowish colour running out in slender longitudinal lines," the whole figure is very dark "sooty-brown" with markings in a slightly lighter shade, with the deep black showing as large irregularly ovoid blobs running longitudinally. The description and the figure do not agree at all, From Barrett's remark above he evidently did not feel certain about the form.

Barrett *l.c.* on pl. 130 gives 9 figs. as follow.

Another very difficult insect to figure. 1. a ♂, has white orbicular and white outline in basal side of reniform: 1a. a ♀ somewhat lighter with normal indecisive marking: 1b. normal ground with decisive, clear marking: 1c. dark ground with light (whitish) basal, subbasal, discal and submarginal series of small blotches: 1d. dark brown, not black, with only the hind marginal blotches and the reniform whitish: 1e. similar, but the same marking with the orbicular, dark cream not white: 1f. a lighter mottled form.

The Names and Forms to be considered are—

nigricans, L. *Fn. Suec.* 322 (1761) [Culot, *N. et G.* I(1). pl. 12, 6 (1909-13)].

ab. *rubricans*, Esp. *Abbild.* IV. 395, pl. 130 (1786).

{ ab. *fumosa*, Fab. *Ent. Sys.* III(2). 115 (1794) = ? *fumosa*, Schiff. *Verz.* 81 (1775) = ? *fumosa*, Gmel. *Ent.* 2574 (1788).

{ ab. *fumosa*, Hb. *Samml. Noct.* 153 (1802) = *fumosa*, Fab.

ab. *obeliscata*, Haw. *Lep. Brit.* 22 (1809).

ab. *ruris*, Haw. *l.c.* 221 (1809).

[ab. *fumosa*, Haw. *l.c.*] = *fumata*, Warr.-Stz.

ab. *dubia*, Haw. *l.c.* 222.

ab. *vilis*, Hb. *Samml. Noct.* 511 (1808-18).

ab. *fuliginea*, Hb. *l.c.* 602 (1818-23).

ab. *carbonea*, Hb. *l.c.* 700-1 (1823).

[ab. *fumosa*, Gdt. *Hist. Nat.* V. 264, pl. 70 (1824)] cf. Hb. 153 = *fumida*, Warr.-Stz.

ab. *ursina*, Gdt. *l.c.* 271, pl. 71 (1824).

[ab. *fuliginea*, Gdt. *l.c.*, VI. 90, pl. 78 (1826)] = *fuliginea*, Hb.

- ab. *marshallana*, Westw. *Br. Mths.* I. 122, pl. 24, 15 (1841).
 ab. *rustica*, Ev. *Fn. Volg. Ur.* 193 (1844), cf. H.-S. II. 526 and 495.
 [ab. *armena*, Ev. *Bull. S.N.S. Mosc.* 222 (1856)] cf. *tritici*.
 ab. *pallida*, Tutt, *Brit. Noct.* II. 34 (1892). Cf. *uniformis*, Rougem.
 (see below).
 ab. *flavo-pallida*, Tutt, *l.c.*
 ab. *rufa*, Tutt, *l.c.*
 ab. *striata*, Tutt, *l.c.* 35.
 ab. *rufo-variegata*, Tutt, *l.c.* 35.
 ab. *quadrata*, Tutt, *l.c.* 36. [Culot, *N. et. G.* I. (1). pl. 12. 7.]
 ab. *ochrea*, Tutt, *l.c.* 36.
 ab. *fusco-variegata*, Tutt, *l.c.* 36.
 ab. *fumata*, Warr.-Stz. *Pal. Noct.* III. 31 (1909).
 ab. *fumida*, Warr.-Stz. *l.c.*
 ab. *uniformis*, Rouge. *Cat. Lep. Jura*, 94, pl. I. 6 (1903) = Tutt's
pallida (1892) teste Rebel.
 ab. *oppidicola*, Krul.
 ab. **subradiata**, nov. ab.
 ab. **radiata**, nov. ab.

Tutt dealt with the following forms.

A. Ground colour grey :—(1) ab. *pallida*—reddish tinge, stigmata and strigae almost obsolete. (2) ab. *flavo-pallida*—reddish tinge with stigmata and strigae yellow.

B. Ground colour pale reddish :—(1) ab. *rufa*—stigmata and strigae of a paler shade of ground colour. (2) ab. *ruris*—stigmata and strigae yellow. (3) ab. *obeliscata*—dark patch between the stigmata. (4) ab. *striata*—stigmata. transverse strigae and longitudinal dashes along the nervures bright ochreous. (5) ab. *rufo-variegata*—characteristics of (3) and (4) combined.

C. Ground colour dark reddish brown and reddish fuscous (1) ab. *rubricans*—stigmata and strigae of a paler shade of ground colour. (2) ab. *vilis*—transverse strigae and stigmata yellow. (3) ab. *quadrata*—dark quadrate spot between orbicular and reniform. (4) ab. *ochrea*—transverse strigae nearly obsolete, stigmata and transverse shades along nervures ochreous. (5) ab. *fusco-variegata*—characters of (3) and (4) combined.

D. Ground colour blackish-fuscous :—(1) ab. *dubia*—darker stigmata and strigae, white line at outer margin. (2) *nigricans*, L.—stigmata paler.

E. Ground colour blackish brown :—(1) ab. *fumosa*, Godt.—Smoky brown, paler strigae and ochreous reniform. (2) ab. *marshallana*—Sooty brown, yellow strigae, indistinct stigmata. (3) ab. *ursina*—Blackish-brown, darker transverse lines and stigmata, border of reniform white (almost unicolorous). (4) ab. *rustica*, Ev.—unicolorous except slightly paler orbicular and reniform.

F. Ground colour black :—(1) ab. *carbonea*—3 stigmata yellowish, transverse lines yellowish. (2) ab. *fumosa*, Haw.—2 stigmata yellowish, transverse lines pale grey. (3) ab. *fumosa*, Fab.—paler strigae and a row of white spots. (4) ab. *fuliginosa*, Godt.—Smoky-black, unicolorous, except outline of stigmata rather paler.

And ssp. or ab. *armena*, Ev.—a pale local ssp. (See Tutt. *Br. Noct.* IV. 113). Now placed to *tritici* by recent writers. (See later).

Warr.-Stz. *Pal. Noct.* III. 31 (1909), notes 22 forms. He replaces *fumosa*, Gdt. (nec F.) by *fumida*, Warr., and *fumosa*, Haw. (nec F.) by *fumata*, Warr.

Corti-Seitz, *Pal. Noct. Supp.* III. 32 (1932) suppress as synonyms of the typical form:—*fumosa*, Hb.; *rustica*, H.-S.; *ursina*, Gdt.; *fuliginea*, Hb.; *carbonea*, Hb.; *uniformis*, Rgt.; and *oppidicola*, Krul.

Perhaps the Japanese *nigricans* forms a genuine subspecies. It is larger, darker, very often with reniform stigma with red or reddish centre.

fuliginea, Hb. *Samml.* 602 (1818-23).

ORIG. DESCRIP.—Very dark black brown with intensely black squarish blotches (1) between the prediscal transverse line and the orbicular; (2) between the orbicular and the reniform; (3) beyond the reniform; and (4) apical but not touching the apex. No. (1) has a narrow extension to the inner margin; no. (3) a wide extension almost to the inner margin. The stigmata are uniform with the ground colour, but outlined with lighter dull surround. The claviform is not perceptible. These blotches do not touch the costa except the apical one. (Made from the figure 602.)

To this Tutt did not refer, but took Godart's figures, which are somewhat different from Hübner's figure, in shape and in the emphasis of the stigmata in the ♀, which give the impression of "markings on the moon," a raised lighter rim with a dark interior, but hardly worth separating by a distinctive name.

Hoffmann and Kloss, *Schm. Stierm.* 368 (1914) refer to an aberration without naming it in which the

"Basal and outer-marginal areas are black, the central area inclusive of the stigmata leather yellow. This colour runs on both upper wings very symmetrically."

ab. *uniformis*, Roug. *Cat. Lep. Jura.* Plt. I. f. 4.

Vorbrot "Schm. Schweiz." I. 276. "Is very certainly only an especially pale, brown grey" *nigricans*.

ab. *subradiata*, nov. ab.

Dr. Cockayne has submitted the following description of an apparently hitherto undescribed form.

ORIG. DESCRIP.—"With medium-brown nervures, orbicular, reniform and claviform outlined with blackish-brown and orbicular with brown dot in centre. There is a slight brown suffusion on forewing—a band across wing and a little suffusion near inner margin (base) and between nervures 1 and 2 base. The rest of wing is a dirty cream. It has a curious radiated appearance."

ab. *radiata*, nov. ab.

ORIG. DESCRIP.—"In this form the radiation is the outstanding feature of two specimens in my own collection. The waved line and the outer marginal line are emphasized on the veins by light straw coloured dots, each in one transverse line is joined to the corresponding dot on the other transverse line by a light connection along the vein. The wing colour is that of dry earth, lighter in one specimen than in

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the other. The stigmata are partly outlined with black, less apparent in the lighter specimen, but shown up in the other by a square deep black space between the orbicular and reniform." Both from the eastern coast of England.

The above two forms are quite different and form a section to add to Tutt's analysis. G. Radiated forms.

Agrotis, Ochs. and Treit. (1816-25) most authors [*Euxoa*, Hb. (1822), Hamps., Warr., Corti.] *cursoria*, Hufn. (1766).

Tutt *Brit. Noct.* II. 39 (1892) : Barrett *Lep. Brit. Is.* III. 324. plt. 129 (1896) : Stdgr. *Cat.* III ed. 148 (1901) ; Hamp. *Cat. Lep. Phal.* IV. 248 (1903) : Splr. *Schm. Eur.* I. 159. plt. 35 (1905) : South. *Moths Br. Is.* I. 206. plt. 106 f. 1-4 (1907) : Warr. Seitz. *Pal. Noct.* III. 30. plt. 6g (1909) : Culot. *N. et G.* I(1). 72. plt. 11. f. 13. 15-18 (1909) : Corti-Seitz. *Pal. Noct. Supp.* III. 29. plt. 3l. 4a (1932).

South has 4 excellent figures. Warren-Seitz. has ♂ and ♀ figures, but the general colour does not convey that of the ordinary *cursoria*.

Spuler. *l.c.* plt. 35. 1 is not a good figure, colour unrecognizable.

Warr.-Seitz. *l.c.* gives figs. of a ♂ and ♀ quite good ; the ♂ grey not ochreous, ♀ markings well contrasted.

Culot *l.c.* fig. 13 is an ochreous form, but not ab. *ochrea*, which is shown in f. 18. Figs. 15-16 both dark forms darkish brown with reddish tint and transverse markings, probably represent ab. *brunnea*. Fig. 17 is called ab. *sagitta*, comparable with Hübner's figure 596.

Barrett, *l.c.* plt. 129. 11 figs. 1 and 1a, ♂ and ♀, are the only figures which suggest this species. 1b suggests a very light *graminis* : 1e somewhat resembles *cinerea* : 1h might be a *tritici* : 1i a very black brown insect with indistinct markings and aberrant shaped and broad forewings may be anything ; perhaps *nigricans*.

Corti-Stz. *l.c.* plt. 3l, *currens*, is a dark brown, not red brown, form. (Stdgr. does not give the ground colour in his description, but Hampson says that the h.w. are entirely suffused brown, which in this figure is not so.) On plt. 4a is good fig. of the *sagitta* form. Plt. 3l has a good figure of *obscurior*, which appears to be a *cursoria* form and certainly not a *tritici* form to which species it has been hitherto placed.

Of the Variation Barrett writes :—Variable in an extraordinary degree, hardly two specimens being precisely alike, and all the varying shading insensibly into each other through intermediates. The varieties in colour and marking seem to extend equally to both sexes, and even with regard to the hindwings there is apparently no strict rule. Most of the forms are in some degree local.

In the forms ranging more particularly around the type the ground colour varies from brownish-buff to pale buff, yellowish-brown, reddish-brown, dull umbreous, and greyish-brown, throughout its area of distribution ; in eastern districts to whitish-brown or even slate-white, while in the west the more umbreous tints prevail, intensified in the west of Ireland to an exceedingly dull sordid umbreous, and blackish brown. In nearly all cases the colour of the upper part of the

thorax follows that of the forewings. In some of those already mentioned the transverse lines of the forewings are distinct, as also are the transverse clouded markings, and brown blotches are noticeable between and beyond the stigmata and outside the second line; in others the lines are distinct but the clouded markings absent, or the lines have disappeared and the clouding has taken possession; the upper stigmata moreover are white, or white with a brown central cloud, or obscure and devoid of white, or nearly imperceptible; the nervures range from whitish to yellowish or very pale brown, or are concolorous with the rest of the wings, or very often a portion of the median in the middle area is marked with a stouter straight whitish line. In individuals where the dark clouding is absent and the transverse lines are conspicuous, the stigmata are sometimes almost obliterated and the first and second lines drawn nearer together, duplicated and formed into a very pretty pattern quite unlike the ordinary forms. In other cases the lines also disappear, and the forewings become unicolorous yellowish brown, except that a brown spot then shows itself in place of the reniform stigma. In the grey-white or slate-white varieties, which seem confined to the east coast, and are rare there, the markings are usually neat, small, sharp, often abundant, the pale nervures edged with darker, and the lines well but slenderly marked; more rarely these, following the example of the brown forms, have the markings mainly obliterated; but on the north east coast of Scotland they are sometimes found much intensified and blackened.

On the Lancashire coast a form is not uncommon of a dull pale umbreous with the transverse lines and the upper stigmata indistinct, but the claviform stigma, a spot before the orbicular, a square blotch between it and the reniform, and a central basal streak all blackish. All along our eastern coasts, in company with the paler forms already described is a range of far more beautiful varieties, having the ground colour smooth yellowish-brown, or whitish-brown, shading off to fawn colour, having a very smooth creamy appearance from the absence of the usual umbreous clouding. In these the dark crescents on the collar are often black or deep brown, the transverse lines are sometimes slenderly distinct, but more frequently absent; there is a broad white or whitish-brown straight stripe from the base along the subcostal region, the two upper stigmata are wholly white or but faintly clouded with brown, coalescing with the stripe, the claviform stigma is distinct, edged or filled with brown or black, and the large squared blotch between the reniform and orbicular stigmata is either rich dark brown, bright brown, or black; very often also the space beyond the reniform stigma is richly clouded with fawn colour. Other specimens have the white subcostal stripe joined to the two white stigmata, but are devoid of the dark spots and clouding of fawn colour, and lean towards the whitish-grey varieties. Others more particularly from the coast of Aberdeenshire and Kincardineshire, are most exquisitely coloured, the markings just described intensified, the subcostal stripe, the two upper stigmata, and the median nervure snowy-white, the claviform stigma and the spots before and between the stigmata brilliant black, the hind margin blackened, and the middle of the wing clouded with rich purplish-red, shading off to brownish-white, or ashy-white. Another beautiful form from the same district is dark purple-brown or red-brown with the transverse lines black, the two upper stigmata dark with sharp

white outlines, the claviform black margined, and the hind-margin rich dark purple-brown. An extreme variety from the Aberdeen district is deep black-brown but showing the typical shape of the elbowed second line; others have the central portion of the forewings entirely deep black or black-brown, and the transverse lines obliterated; others again in unbroken sequence shade off to dull dark brown, pale brown and pale buff, all the typical markings more or less obliterated until the species is hardly recognisable; one specimen is of the colour and appearance of *chenopodii*, another bears a most curious resemblance to *Agrotis suffusa*, and a dark purple-brown example so closely resembles one of the varieties of *A. tritici* that it can only be recognized with any certainty by its underside. A curious form from the Orkneys is dark slate-colour, smooth and unicolorous except the two whitish stigmata; others from that locality are much more ordinary. Those obtained from Unst, Shetland have the rich fulvous or tawny-colouring, with strong markings, like those from Aberdeenshire, and they vary comparatively little. [Dr. Cockayne, from personal knowledge of this area, does not consider this statement as correct.]

In many of the forms the hindwings are occasionally quite white, or on the other hand wholly tinged with greyish-brown, but in the vast majority the grey brown hind-marginal band is more or less visible.

The underside of the forewings is far more constant than the upper, the hind marginal space, beyond the dark stigma and stripe, being always pale and shining, often white. By this the species may be recognized when all the characters of the upper side seem to have been lost.

He records a specimen "almost smooth straw-colour, but with the transverse lines thick and complicated, the spaces between stigmata and hind-marginal cloud red-brown, and the whole wings beautifully variegated."

The Names and Forms to be considered are as follow;—

cursoria, Hufn. (1766), *Berlin Mag.* 496.

ab. *mixta*, Fab. (1787), *Mant.* II. 144: (1794), *Ent. Sys.* III. (2),

36.

f. *sagitta*, Hb. (1808-18), *Samml. Noct.* 596.

f. *armena*, Ev. (1856), *Bull. Mosc.* 222.

ab. *obscura*, Stdgr. (1871), *Cat.* IIed. 86.

ssp. *cespitis*, Swnh. (1885), *Trans. Ent. Soc.* 349.

ab. *caerulea*, Tutt (1892), *Brit. Noct.* II. 41.

ab. *costa-caerulea*, Tutt (1892), *l.c.*

ab. *puncta*, Tutt (1892), *l.c.*

ab. *pallida*, Tutt (1892), *l.c.* 42.

ab. *distincta*, Tutt (1892), *l.c.*

ab. *obsoleta*, Tutt (1892), *l.c.*

ab. *obsoleta-puncta*, Tutt (1892), *l.c.*

ab. *ochrea*, Tutt (1892), *l.c.*

ab. *brunnea*, Tutt (1892), *l.c.* 43.

ab. *marginata*, Tutt (1892), *l.c.*

race *obscurior*, Stdgr. (1892), *Rom. Mem.* VI. 420.

ab. *sagittata*, Stdgr. (1896), *Iris*, IX. 249.

ab. *currens*, Stdgr. (1896), *l.c.*

ab. *vaga*, Stdgr. (1896), *l.c.* 250.

race *asiae-minoris*, Strnd. (1915) [*Cat. Lep. Phal.* IV. 249 (1903)], Strnd. *Arch. Naturg.* LXXXI. Abt. A. Heft 12, p. 144 (1915).

f. *mülleri*, Hanel. (1920), *Int. Ent. Zt.* XIII. 185.

ab. *nigrescens*, Hanel. (1920), *l.c.*

ab. *nigrovittata*, Hanel. (1920), *l.c.*

Tutt dealt with—A. Ground colour slaty-grey. (1) *caerulea*, without pale costa. (2) *costa-caerulea*, with pale costa.

B. Ground colour greyish-white (slightly ochreous). (1) *armena*, with obsolete markings, and white hindwings (now treated as a separate species). (2) *mixta*, with distinct transverse markings. (3) *pallida*, with longitudinal markings.

C. Ground colour yellow-ochreous. (1) *obsoleta* with obsolete markings. (2) *cursoria*, with distinct transverse markings. (3) *ochrea*, with longitudinal markings. (4) *obsoleta-puncta*, with a black spot in lower part of the reniform.

D. Ground colour brown, with a reddish tint. (1) *obscura*, with obsolete markings. (2) *brunnea*, with distinct transverse markings. (3) *sagitta*, with longitudinal markings.

And Tutt also placed *puncta* to *armena*; described an extreme *pallida* = *distincta*, Tutt; and named as *marginata* = an extreme *brunnea* with whole of wing to the subterminal line of a deep blackish fuscous.

It seems quite impossible to determine the value of some of these Agrotid names. No two authorities on the continent agree on the determination and even in Seitz we meet with uncertainty and acceptance of opinion. I can only include opinions as I find them.

Warr.-Seitz places *armena*, Ev. as a true species but states that it resembles *cursoria* but is paler. This therefore carries ab. *puncta* with it.

The *obscura*, Stdgr. *Berl. Ent. Zt.* (1870), 113, should probably be placed to *armena*, see Corti-Seitz. This is probably the ab. *obscura* of Stdgr. *Cat.* Ed. II. (1871) of which Tutt says that, he has "never seen any British specimen in any way resembling them." "Al. ant. fere totis rufo-brunneis."

Race *cespitis*, Swinh. *Trans. Ent. Soc.* (1885) 349.

FIG.—*l.c.* plt. 9. f.4.

ORIG. DESCRIP.—"Very pale fawn colour; thorax with a slender brown band in front; abdomen whitish; tarsi with black bands; forewings with pale brown marks on the costa, mostly in pairs; a dark brown sinuous marginal line; orbicular spot, long, large and club-shaped, with brown border; claviform long and narrow; reniform large, with incomplete brown borders; an interior and exterior brown irregular undulating line; fringe pale cinereous with a brownish line running through the centre of it; hindwings white, tinted with fawn colour towards the costa." Quetta. Aug. and Sept.

Race *obscurior*, Stdgr., "*Rom. Mem.*" VI. 420 (1892).

FIG.—Corti.-Stz. *Pal. Noct. Sup.* III. plt. 31.

ORIG. DESCRIP.—"Dorries sent me two specimens from Suifun (Amur-gebiet) which, as both those found by Graeser at Nikolajewsk and Chabarowka, come near the dark ab. *eruta*, but have the markings

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of *r. aquilana*. Seven specimens, which the younger Dorries sent from the Lutshan-Gebiet, are similarly dark, as those from Suifun, and one is quite justified in naming these dark Amur-forms as var. *obscurior*."

This race has been attached to *tritici* hitherto, but Corti-Seitz. *Pal. Noct.* III. *Sup.* 29 (1932) says "Probably the almost red-brown form from Berlin, the Baltic Provinces, Russia and Sarepta and also in England and denominated hitherto as ab. *obscurior*, Stdgr. is a definite variety," of *cursoria*.

Hampson's note *Cat. Lep. Phal.* IV. 294 (1903) "Similar to *eruta* but blacker," is apparently an error of identification. [*eruta* = Fuscous brown, irrorated with grey, the markings indistinct.]

ab. *sagittata*, Stdgr. *Iris.* IX. 249 (1896).

ORIG. DESCRIP.—"Pale sand-grey. As ab. *sagittata* I must name those divergent specimens which were sent mostly as *sagitta*, Hb. of the European *cursoria*. The chief characters of the forewings of this often occurring aberration are a lighter (whitish) costal streak, lighter, mostly dark margined, upper stigmata, and forewings less marked by transverse and longitudinal lines. But there occur all intermediates from the typical form to this ab. *sagittata*. Really typical ab. *sagittata* occurs singly but rarely under the var. *currens*."

l.c. Kozhantochikov says that the "ab. *sagittata*, Stdgr. (= *sagitta*, H.-S.) is a genuine separate species." Hübner's fig. 596 is a bad shape ♂. Her.-S.'s fig. 26 is ♀ and lighter in ground colour but with brighter stigmata. Hübner's fig. is much brighter rufous-brown, but the stigmata are not pronounced. Some Aberdeen and Shetland specimens resemble Hb. 596.

Hampson.—"Fore-wings suffused with red brown, the costal area to the post-medial line, the orbicular and reniform and the area before the subterminal line, whitish." *Cat. Lep. Ph.* IV. 248 (1903).

r. currens, Stdgr. *Iris.* IX. 249 (1896).

ORIG. DESCRIP.—"This very variable species was sent in large numbers particularly from Jedirin-Gol. Alpheraky most probably sent specimens varying from one another, and therefore I said to myself 'We have from Ourga (also certainly from eastern Changai) all the forms and all the intermediates and I can only see *Ag. cursoria*, which varies immensely.' He has judged aright, but I find that these Mongolian specimens are throughout different from our German (European) *cursoria*, and that they should have a distinctive name as var. *currens*.

"They are mostly somewhat darker, especially on the hindwing and on the underside, the forewings are often more strongly (transverse) marked, etc. Frankly there is no good defined difference, many examples of this v. *currens* cannot be distinguished from European *cursoria*."

Hampson.—"Darker; hindwings entirely suffused with brown." Central Asia, *Cat. Lep. Ph.* IV. 248 (1903).

The variety *currens*, Stdgr. *l.c.* is according to Filipjef "synonymous with *detorta*, Ev.," a *tritici* form, Seitz-Corti. *Pal. Noct. Sup.* III. 32.

r. vaga, Staud. *Iris.* IX. 250 (1896).

ORIG. DESCRIP.—"Another form I note as ab. *vaga* from 9 examples

lying before me; I am not certain whether they all really belong to *v. currens*. Their forewings are almost more like those of *obelisca* ab. *ruris*, Hb. than those of *cursoria*, they also resemble somewhat the more typical *conspicua* or *saucia v. margaritosa*, both of which last species are quite separable by their much larger size. One specimen of this apparently ab. *vaga* form is quite large, 45mm. (others are only 36-40mm.), and it appears to me therefore especially as a pale aberration of *cursoria*; but I can separate it only by its size from the other *vaga*. Further these ab. *vaga* are distinguished only by the more uniformly toned markings of the forewings, and by the underside of the hindwings, the costal parts being somewhat more thickly darkened than the usual *v. currens*."

l.c. Corti-Seitz says "The ab. *vaga*, from Ulias established by Staudinger is a variety of *adumbrata*, Ev." Corti.-Seitz *Pal. Noct. Sup.* III. 28.

Hampson.—"Forewings uniform brownish grey." Central Asia. *Cat. Lep. Ph.* IV. 248 (1903).

ab. *asiae-minoris*, Hamps. [*Cat. Lep. Ph.* IV. 249 (1903)] : Strand. *Arch. Naturg.* LXXXI. Abt. A. Heft. 12. p. 144 (1915).

ORIG. DESCRIP.—"Hindwing entirely white." Asia Minor.

This is close to *armena* apparently, which is wholly "greyish-white" with mostly obsolete marking.

ab. *mülleri*, Hänel. *Int. Ent. Zeit.* XIII. 185 (1920).

ORIGINAL DESCRIP.—"For the most part agrees with the form *sagittata*, Stögr. but with complete absence of the inner and outer waved lines on the fore-wings." Dievenow, Charlottenburg.

ab. *nigrescens*, Hänel. *Int. Ent. Zts.* XIII. 185 (1920).

ORIGINAL DESCRIP.—"General colour of the fore-wings black-brown, with the exception of a fine, pale yellow frame surround of the orbicular and reniform stigmata, as well as the submarginal line." Dievenow, Charlottenburg.

ab. *nigrovittata*, Hänel. *Int. Ent. Zts.* XIII. 185 (1920).

ORIG. DESCRIP.—"Forewings—Ground-colour yellow-brown. Space between the inner and outer waved lines dark brown. The darkening extends to the inner margin, the foremost part of this space above the subcostal vein, yellowish." Dievenow, Charlottenburg.

Agrotis, Ochs. and Treit. (1816-25). Most authors. [*Euxoa*, Hb. (1822) Hamp., Warr.-Seitz., Corti.-Stz.] *tritici*, Linn. (1761).

Tutt says, *Brit. Noct.* II. 43. "If there is any British species more variable than all others this is probably the species." And again, "Great as are the differences between the different forms, it is entirely in different shades of ground colour, and suppression or special development of markings, that the variation takes place."

Each writer who takes up this *tritici* species, or group of forms? (species?), seems to disagree with previous authors and yet is unable to really make our knowledge more definite. The fact, that Pierce was

unable to use the result of his genitalic examination to separate definitely the species *obelisca*, *nigricans*, *cursoria*, *tritici* and *aquilina*, makes the difficulty still more. He remarks, *Genitalia of the Noctuidae*, p. 53 that, "This group of five species is an example of a failure of the genitalia for specific classification, the points of difference being very minute."

Hence, without an enormous amount of material, it seems futile to discuss these forms and with a list of the names imported into this species, a summary of the various opinions of the chief recent authors, and the original descriptions not given in Tutt's volume, one must perforce leave the fuller investigation to the future.

Possibly the best method of dealing with the names would be to take one form by itself and thoroughly investigate it in all its connection as P. Curtis has done with *pseudogothica* (*subgothica*, Haw.).

Tutt, *Brit. Noct.* II. 43 (1892): Barrett, *Lep. Br. Is.* III. 336, 347 (*aquilina*), pls. 131-2 (1896): *Stdgr. Cat.* III ed. 150 (1901): Hamp. *Lep. Phal.* IV. 293 (1903): *Splr. Schm. Eur.* I. 160, plt. 32, f. 6 (1905); South, *Moths Br. Is.* I. 207, plt. 106, 7-11 (1907): Warr.-Stz. *Pal. Noct.* III. 35, plt. 6k (1909): Culot, *N. et G.* I(1). 76, plt. 12, f. 11-18; plt. 13 (1909-13): Corti-Stz. *Pal. Noct. Sup.* III. 33, 26 (*aquilina*), plt. 4ef and 3gh (1932) [the continental species *aquilina* is meant.]

Barrett, *l.c.* on pls. 131-132, gives 18 figs. (including 3 of *aquilina*).

Hardly two examples of this species agree so that one can pick out scarcely any form with strong outstanding characters. 1d. on plt. 181 is uniformly brown like *oleracea*, with a fine white submarginal line and white encircled orbicular and reniform: several other figures have strong white markings: the *aquilina* figures are dominated by brown with markings of a lighter or darker shade of brown.

South, *l.c.* plt. 106, gives 5 figs. all of which are dominated by the general rich brown coloration of the plate and give no idea of the beauty of many of the variegated forms of this species.

Warr.-Stz. *l.c.* plt. 6k. gives three figures: *tritici* with no white markings, the costal streak apparent, but not emphasized, except by smoothness; *aquilina*, a brown form, larger; and *eruta*, small with grey suffusion over dark ground, markings more or less present.

Culot, *l.c.* pls. 11, 12, 13, gives ten figures: 11, 14 *tritici*, a grey brown with fairly obvious markings; 12, 11 *tritici*, a brown almost uniformly coloured specimen with a few cloudy markings; 12, 12-13 *subgothica*, well marked with light and dark, one with whitish costa; 12, 14 *eruta*, a deeper brown form; 12, 15 *fumosoides* another brown form with smoky marking; 12, 16 *costa-fusca*, a grey variegated form; 12, 17 *stepi*, a uniform medium-brown form with black transverse lines before and beyond the stigmata; 12, 18 *aquilina* ab. *unicolor*, a light brown-ochreous form with scarcely any markings; 13, 1 *aquilina*, a blackish brown form with lighter orbicular, reniform and other markings.

The names given to some of these figures are open to criticism.

Corti-Stz., *Pal. Noct. Sup.* III. plt. 4 ef. give 4 figures of *tritici* forms, two of which are of new forms; *insulana*; *reisseri*; *sagittifera*, Steph.; and *pseudogothica*, P. Curt. They give on plt. 3gh. figures of *aquilina* treated as a species, and of the forms *rabiosa*, new; *falleri*; *distincta*;

and *obscurior*. The following are also figured and treated as true species;—*siliginis*, Gn.; *vitta*, Esp.; and *siepi*, Obthr. on pls. 4f., 3l., and 3e. respectively.

Barrett, *l.c.* says of the Variation:—"Variation in this species is so extensive as hardly to be defined by words, while all the forms, however extreme, are so completely united by intermediate gradations that no satisfactory line can be drawn between any of the different varieties, though the names which have been applied to them are sufficiently numerous. The ground colour varies from whitish-brown through all shades of wainscot brown, greyish-brown, reddish-brown, umbreous, chocolate-brown, and rich purple-brown, to deep brown-black. Specimens may even be found, though rarely, of a pale slate-grey, or whitish-grey, and others of a soft fawn colour. In my own experience such as these have occurred in Norfolk, where, on the other hand, I have found my blackest specimens. Elsewhere the blacker forms seem to be more particularly confined to the west coast of Ireland and the north and west coast of Scotland. In markings the variations are perhaps a little more defined. Ordinarily in all the variations of ground colour the orbicular and reniform stigmata are visible, either wholly pale or with pale margins; though in size the orbicular is far from constant. With these, especially in the coast forms, is usually the pale subcostal stripe—white, yellowish-brown, brownish or even reddish—and in a considerable proportion of them a whitish line branches off from the stripe along the median nervure. In all these distinctly marked specimens there is a general tendency to clear, smooth colouring, often beautifully shaded, and to distinctness of the transverse lines, of the black wedges before the subterminal line, and especially of the deep black spaces before and between the stigmata; and these various characters are combined or separated in every proportion and variation of arrangement. It is also a curious circumstance that these well-marked and handsome forms, in all the colours, seem to be confined, or almost confined, to the coast and to the stretch of ancient coast in the west of Norfolk and Suffolk, known as the Breck Sands. In Sherwood Forest a deep purple-brown form prevails, but the usual inland forms, found mainly upon heaths, are pale umbreous, mottled all over the forewings with darker umbreous, sometimes showing the stigmata faintly paler, or the transverse lines rather darker, but often all obscured by the brown mottling. In these the only distinct marking is sometimes a well-defined dark brown cloud lying along the hind-margin beyond the subterminal line. Perhaps the tendency of this range of variations may best be expressed by stating that the more extreme forms bear in some cases a most curious resemblance to *Caradrina cubicularis* and in others to *Hadena chenopodii*. In the coast varieties very curious resemblances also occur, setting aside the constant resemblance of the browner forms to the very closely allied *A. aquilina*, some take a purplish or lilac shade which makes them resemble *A. obeliscata*; others, with rich fawn colour, a somewhat more distant approach to *A. agathina*; while in other purple-red forms an occasional specimen shows so red a subcostal stripe as to remind one of *Noctua plecta*, and I have a specimen from the N. of Ireland, which, but for its far narrower wings, would surely be mistaken for a red *N. xanthographa* with distinct yellowish stigmata. These suggestions may seem fanciful,

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but the actual resemblances are rather startling, and no method suggests itself by which they may be realised so good as that of pointing out the species which seem to be imitated. That there is *actual* imitation is not, for a moment, to be supposed. Perhaps the most curious apparent imitation is that to a N. American species—*A. subgothica*; of this a fine example is before me. Its general colour is rather dark umbreous, stigmata paler but not strikingly so, the orbicular small and oblique, the subcostal stripe very pale brown, and from it, just before the orbicular stigma, a similar pale brown stripe obliquely down the wing straight towards the anal angle. This oblique stripe appears completely or partially in occasional specimens of other colourings and markings, which do not at all resemble *A. subgothica*, and it is perhaps most frequent in an east coast form having whitish-brown or very pale wainscot-brown ground colour, the forewings of which are also very narrow." [On p. (48) above, line 7 from bottom read *obelisca* and not *obeliscata*.]

Barrett records the following individual forms.

1. "The usual dark markings are of a rich velvety black, purple-black and purple-brown, the subcostal stripe clear white, and in some, the median nervure, the first line and the two stigmata outlined with the same; others have the subcostal stripe yellow." Scotland, N.E. Coast.

2. "It resembles *A. obelisca* in some degree, but is more dull in colour and devoid of the pale subcostal stripe; transverse lines distinct, black; stigmata of the ground colour but outlined in black; otherwise unicolorous. Hindwings dull pale grey." Dumfriesshire.

3. "A remarkably delicate light-brown." Norfolk.

4. "Equally pale but has the whitish stigmata almost squared, the intermediate spot strikingly black." Antrim Coast.

List of names used in the *tritici* complex.

tritici, L. (1761) *Fn.S.* 320.

aquilina, Schiff. (1775) *Verz.* 80. Now considered a good species.

nigrofusca, Esp. (1786) *Schm. Abbild.* IV. 383. pl. 127.

vitta, Esp. (1786?)* *l.c.* IV. 457. pl. 143. f.6.

pratinceola, Bork. (1792) *Naturg.* IV. 553. Now considered a pure synonym.

domestica, Fab. (1793) *Ent. Sy. etc.* III(2). 23. Now treated as a pure synonym.

aquilina, Hb. (1802) *Samml. Noct.* 135. Considered probably a true continental species only.

ab. *pupillatus*, Haw. (1803) *Lep. Brit.* 118 (1809) 223 as *pupillata*.

praticola, Hb. (1808-18) *Samml. Noct.* 567. Should be attached to *obelisca*.

eruta, Hb. (1808-18) *l.c.* 623. Probably a true species.

fictilis, Hb. (1808-18) *l.c.* 479. Considered by some to be a figure of typical *aquilina* (Schiff.)?

ab. *sordida*, Haw. (1809) *l.c.* 222.

valligera, Haw. (1809) *l.c.* 222.

ab. *albilinea*, Haw. (1809) *l.c.* 223. Is the *lineolata*, Haw.

* The figure was published before 1792 but not the description. See Ernst. and Engr. *Pap. d'Eur.* VIII. 38 (1792).

- ab. *lineolata*, Haw. (1809) *l.c.* 223.
- ab. *subgothica*, Haw. (1809) *l.c.* 224. Becomes *pseudogothica*, P. Curt.
- ab. *sagittifera*, Steph. (1829) *Ill.* II. 119. "Possibly a local race in England." (Corti).
- ab. *hortorum*, Steph. (1829) *l.c.* 122.
- ab. *ocellina*, Steph. (1829) *l.c.* 122.
- ab. *cuneigera*, Steph. (1829) *l.c.* 123. Is the *valligera*, Haw.
- ab. *venosa*, Steph. (1829) *l.c.* 123.
- obeliscata*, Steph. (1829) *l.c.* 124. = *obeliscata*, Haw. Possibly *obelisca*, Schiff.
- seliginis*, Dup. (1836) *Hist. Nat. Sup.* III. 211. pl. 19. Probably a good species.
- sequilis*, Bdv. (1840) *Index Meth.* 110.
- ab. *vitta*, H.-S. (1846) *Sys. Bearb.* II. 343. f. 527-8.
- detorta*, Evers. (1851) *Bull. Mosc.* 627 (1856): *l.c.* 184. Probably a good species.
- siliginis*, Gn. (1852) *Hist. Nat. Noct.* V. 287. This is *seliginis*, Dup.
- gypaetina*, Gn. (1852) *Hist. Nat. Noct.* V. 290. Probably a good species.
- varia*, Alph. (1889) *Rom. Mem.* V. 138, pl. 7, 1. Probably a good species.
- jaculifera*, Gn. (1853) *Hist. Nat. Noct.* V. 262 = *subgothica*, Haw. in pt. Comparable to *aquilina*. Canada.
- ab. *obsoleta*, Tutt (1892) *Brit. Noct.* II. 47.
- ab. *puncta-obsoleta*, Tutt (1892) *l.c.* 47.
- ab. *costa-obsoleta*, Tutt (1892) *l.c.* 47.
- ab. *nana*, Tutt (Zell.) (1892) *l.c.* 47.
- ab. *caerulea*, Tutt (1892) *l.c.* 47.
- ab. *costa-caerulea*, Tutt (1892) *l.c.* 48.
- ab. *minor-caerulea*, Tutt (1892) *l.c.* 48.
- ab. *pallida*, Tutt (1892) *l.c.* 49.
- ab. *fusca*, Tutt (1892) *l.c.* 50.
- ab. *costa-fusca*, Tutt (1892) *l.c.* 50.
- ab. *ochracea*, Tutt (1892) *l.c.* 52.
- ab. *nigra*, Tutt (1892) *l.c.* 56.
- ab. *costa-nigra*, Tutt (1892) *l.c.* 57. Is the *ocellina*, Steph.
- ab. *virgata*, Tutt (1892) *l.c.* 58.
- ab. *obsoleta-pallida*, Tutt (1892) *l.c.* 49.
- ab. *obscurior*, Stdgr. (1892) *Rom. Mem.* VI. 420. Considered to be form of *aquilina*, Schiff.
- distincta*, Stdgr. (1892) *Iris*, V. 358. Considered to be a form of *aquilina*, Schiff.
- siepii*, Obthr. (1907) *Bull. Soc. ent. Fr.* (27.) Now treated as a species.
- ab. *fumosoides*, Culot (1909-13) (Obthr.) *N. et G.* I(1). 78, pl. 12, 15.
- donzelii*, Bng.-Haas (1910) *Iris*, XXIV. 37, pl. iii. f. 9.
- wagneri*, Corti (1926) *Schw. ent. Anz.* V. 3.
- falleri*, Schwrd (1927) *Zt. Oestr. Ent. Ver.* XII. 110.
- ab. *pseudogothica*, P. Curt. (1927) *Ent. Rec.* XXXIX. 141. Replaces in part *subgothica*, Haw. "Possibly a local race in Gt. Britain," Corti.
- obeliscata*, Wagner (1929) *Mitt. Münch.* XIX. 74.
- venosa*, Schw. (1930) *Zt. Oestr. Ent. Ver.* XV. 9.

rubiosa, Corti (1931) *Pal. Noct. Sup.* III. 27. A race of *aquilina*.
insulans, Corti (1932) *l.c.* 33.
reisseri, Corti (1932) *l.c.* 33.

Tutt attempted to analyse the forms which came under his notice. He pointed out that the typical form described by Linn. *Sys. Nat.* had the following characteristics—streaked costa; pale median nervure; row of wedge-shaped spots parallel to the hind-margin; colour cinereous; 2 stigmata pale; claviform black; black spot in the orbicular stigma: cf. Newman's first figure in *Brit. Moths.* p. 330 (1869).

A. Ground colour pale slaty-grey.

a. Without pale costa (1) Transverse and longitudinal markings obsolete = *obsoleta*. (2) as in (1) but lower half of reniform blackish = *puncta-obsoleta*.

b. With pale costa (1) Transverse markings indistinct, longitudinal slightly developed = *costa-obsoleta*. (2) as in (1) but very small = *nana*, Zell.

B. Ground colour clear slate or dove-colour.

a. Without pale costa. (1) Transverse markings more or less distinct = *caerulea*.

b. With pale costa. (1) Trans. and long. markings more or less distinct = *costa-caerulea*. (2) As in (1) but very small = *minor-caerulea*.

C. Ground colour slaty fuscous.

a. Without pale costa. Trans. markings more or less distinct = *eruta*, Hb.

b. With pale costa. Trans. markings more or less distinct = *vitta*, Hb.

D. Ground colour greyish white.

a. Without pale costa.—Trans. markings more or less distinct = *pallida*.

b. With pale costa.—(1) Distinct markings and dark space between the stigmata = *sagittifera*, Steph. (2) Indistinct markings = *obsoleta-pallida*.

E. Ground pale greyish-fuscous.

a. Without pale costa. (1) Markings distinct = *fusca*. (2) Markings indistinct = *siliiginis*, Gn.

b. With pale costa. (1) Distinct trans. markings = *costa-fusca*. (2) Dark space between stigmata and no wedge-shaped spots = *subgothica*, Haw. (*pseudogothica*, P. Curt.).

F. Ground dark greyish fuscous.

a. Without pale costa. (1) Distinct trans. markings = *sordida*, Haw. (2) Two trans. lines, central area pale = *pupillatus*, Haw.

b. With pale costa. (1) With distinct markings = *tritici* (typical).

G. Ground pale yellowish ochreous.

a. Without pale costa. (1) Trans. markings more or less distinct = *ochracea*.

b. With pale costa. (1) More or less distinct markings = *detorta*, Ev.

H. Ground reddish-brown.

a. Without pale costa. (1) Distinct trans. markings = *valligera*, Haw. (2) Indistinct trans. markings = *cuneigera*, Steph.

- b. With pale costa. (1) Distinct trans. markings = *albilinea*, Haw. (2) With the cuneiform spots strongly developed = *lineolata*, Haw.
- I. Ground dull brown.
- a. Without pale costa. (1) Distinct transverse marking = *aquilina*, God.
- b. Pale costa. (1) Distinct markings = *tritici*, God. = *fictilis*, Hb. (2) Indistinct markings = *aquilina*, Hb.
- K. Ground blackish-brown.
- a. Without pale costa. (1) With distinct trans. markings = *venosa*, Steph. (2) As in (1) but more ash-coloured = *hortorum*, Steph.
- b. Pale costa. (1) With ill-developed trans. markings = *nigro-fusca*, Esp. (2) Distinct markings = *gypaetina*, Gn.
- L. Ground black.
- a. Without pale costa. (1) More or less distinct markings = *nigra*.
- b. Pale costa. (1) Costal streak ill-developed = *ocellina*, Steph. (2) Ditto well developed = *costa-nigra*.

He dealt separately with (1) *vitta*, Esp. Fuscous brown, whitish costal streak and central nervure, white surround of orbicular, reniform pale outline, dark fuscous shade on hind-margin. Hindwings white and grey outer margin. (2) *domestica*, Fab. Forewings cinereous, waved trans. lines black, ordinary stigmata, anterior white (orb.), costa 7 black spots and 3 white. (3) *ab. virgata*: with dark central band, between basal and elbowed line; ground pale ochreous tinted with reddish, claviform very black; orbicular pale grey; reniform pale. In Vol. IV. Tutt deals with (4) *varia*, Alph. with the costa standing out strongly from the dark ground which is almost black; very large claviform. And (5) *detorta*, Evers. Edge of reniform perfectly straight basad; much resembles *senna*, Hb. *Praticola*, Hb. (567) is also given, but at present it is considered to be a form of *obelisca*, and the *pratincola*, Bork. is transferred to *tritici*.

Her.-Schäf. *Sys. Bearb.* II. 343 (1848-) discusses the figures thus:—Hüb. 479 is *aquilina* (Tr. calls it *tritici*): but Hb. 630 *recussa* is a true species. H.-S. (Plt. 103) 527, 528 belong to *v. vitta*. (Plt. 104)* 527, 528, very black examples; 520, 530 very coppery-red examples. Hb. 533, 534 *vitta* are very bright coloured examples with much white on the costa. One with fore-wings narrower and the other broader, rounded at the apex, the white streak of the costa rarely goes as far as the apex. Esp. *Noct.* pl. 67 by colour is *aquilina*; Duponchel also places *vitta* Hb. as well as *ruris* to *aquilina*. Tr. considers this last to be a true species. Hb. 530 *aquilina* an example with no transverse lines nor elbowed line. The *pratincola*, Bork. is *tritici*. Hb. 567 is a tolerably reddish ♂. Hb. 623 *eruta* is a moderately sharply marked nearly unicolorous female such as often occurs; the best of the figures of Hb., the forewings mostly mixed with white grey, the hindwings whitish; thus in no way to be distinguished from *sequilis*, H.-S., 545 has very light ground colour and sharp marking (Frr. pl. 255). The most unicolorous examples with the utmost minimum of marking,

* The numbers 527-28 occur on both plates, 103-104.

are *segnilis*, those with much white on the costa and sharp white middle vein are *vitta*, Hb.

Warr.-Seitz, *Pal. Noct.* III. 32 (1909), considered the *pratincta*, Bork. and *domestica*, Fb. as synonyms of the typical form. He deals with the following aberrations:—*aquilina*, Schiff. (= *fictilis*, Hb. fig. 479): *obeliscata*, Stph.: *eruta*, Hb.: *siliginis*, Gn.: *obscurior*, Stdgr.: *detorta*, Ev.: *varia*, Alph.: *distincta*, Stdgr.: *obsoleta*, Tutt: *costaobsoleta*, Tutt: *coerulea*, Tutt: *costacoerulea*, Tutt: *pallida*, Tutt: *sagittifera*, Steph.: *fusca*, Tutt: *costafusca*, Tutt: *sordida*, Haw.: *pupillata(us)*, Haw.: *ochracea*, Tutt: *virgata*, Tutt: *valligera*, Haw. (*cuneigera*, Steph.): *albilinea*, Haw. (= *lineolata*, Haw.; *aquilina*, Hb., f. 536): *venosa*, Steph.: *hortorum*, Steph.: *nigrofusca*, Esp.: *nigra*, Tutt: *ocellina*, Steph. (= *costanigra*, Tutt.)

Culot. *N. et G.* I(1). 76, pl. 12, f. 11. (1909-13), gives a figure of what he considers typical *tritici*, which is of a light ochreous-grey ground, with well developed stigmata and darker clouding partly around them; black sagittate marks small; double submarginal line with fuzzy edge both sides. Fig. 12 is a fine figure of ab. *subgothica*. Fig. 14 is the form *eruta* of slaty coloration with concolorous costa. Fig. 15 is the ab. *fumosoides* (see below). Fig. 16 is Tutt's *costa-fusca* with a thin fuscous line along the costa. Fig. 17 is ab. *siepii* (see below). Fig. 18 of a uniform pale sandy colour with faint remnants of the stigmata as the only markings, ab. *unicolor*, Hb., which may be an extraordinary form of *aquilina* it is said. Plt. 13, fig. 1 is *aquilina*. Culot gives a number of names which have been associated with *tritici*, but it seems almost impossible to unravel the group of forms rightly or wrongly brought under this name. One can only give the indications and opinions of others.

Corti-Seitz, *Pal. Noct. Supp.* III. 33 (1932), calls *tritici* "a group of forms," and criticises the names and forms already dealt with by Tutt and Warren thus. He says "*aquilina*, Schiff. is a separate species, also *eruta*, Hb. and *siliginis*, Gn.; *detorta*, Ev. and *varia*, Alpher. do not belong to *tritici* but to the sub-genus *Mesoeuxoa*:—*distincta*, Stdgr. is a form of *aquilina*, similarly *obscurior*, Stdgr." He goes on to say that "The other denominations of aberrations by Tutt and other English authors appear to me absolutely unjustified as they only refer to quite unimportant colour and marking aberrations and cannot be clearly separated from one another."

He agrees with Curtis (Parkinson) that *subgothica*, Haw. (changed to *pseudogothica*, P. Curt.) is perhaps a genuine local race in England, and possibly *sagittifera*, Steph. is one also. He suggests *obelisca(tu)*, Steph. may be *obelisca*, Schiff. but cannot decide. He names a race from the Isle of Sylt as *insulans* and a race from Sierra Nevada, Spain; as *reisseri*, and gives a colour aberration ab. *fumosoides*, Culot (Obth. in l.) from Brittany. He treats *siepii*, Obthr. as a species.

aquilina, Schiff. (1775) *Verz.* 80.

ORIG. DESCRIP.—Among the Noctuae whose larvae live in the ground. "The moths have a very small crest, mostly narrow, mostly earth-coloured or with quite dusky upper wings, with a third stigma (claviform) below a pale streak under the other two stigmata. With black collar." "The Black-toothed Eagle Brown." Not British according to all recent continental authorities.

As Parkinson-Curtis points out, *Ent. Rec.* XXXIX. p. 141 (1927), the complication in the use of the name *subgothica*, Haw. on both continents is so confusing that he has substituted the new name *pseudogothica* for its use in connection with *tritici*. That is for the "pale greyish fuscous form, with pale costa, with dark space between the stigmata and no cuneiform spots."

Stephens, *Ill.* II. 124 (1829) says his *obeliscata* is that of Haworth.

Haworth, *Lep. Brit.* 222 says with a ? that his *obeliscata* is that of Hübner, *Noct.* f. 123. This last is called *obelisca*, and not *obeliscata* by Hb.

seliginis, Dup. (1836) *Hist. Nat. Sup.* III. 211 (*siliginis*, Gn.).

FIG.—*l.c.* pl. 19-6.

ORIG. DESCRIP.—"Forewings blackish brown, with the two usual stigmata of a light brown and very regular; they are finely encircled with black, and inside the outer sides only edged with whitish grey. A short distance from the outer margin and parallel to it the wing is crossed by a wavy line of small black sagittate spots each with a white dot on the outer side." Between the orbicular and the base of the wing the transverse lines are ill developed, and irregular, black traces only. It does not suggest a *tritici* form. It is suggested by Tutt that it is a sub. var. of his *fusca*, *l.c.* 50. He does not give the original description. All opinions of it differ.

siliginis (Friv.) Gn. (1841)? (1852) versus *seliginis*, Dup. (1836) versus *segnilis*, Bdv. (1840).

The French authors each spelled this name in their own way altering the MS. name of Frivaldski.

"*Siliginis* is the genitive of *siligo*, which, however, is not a Latin word; but the *seligo* of Dup. is in a similar position, and *segnilis*, Bdv. is the same. The rectifications (!!) so called are equally bad. Guenée settled the matter by adopting the prior name *siliginis*."

subsp. *varia*, Alph. *Rom. Mem.* V. 138 (1889).

FIG.—*l.c.* pl. 7. f. 1.

ORIG. DESCRIP.—"Six specimens are very notable by the costa, the median nervure and the cellular spots of the fore-wings, which are of a greyish white, which encroach distinctly on the deep, at times almost black ground. A series of sagittate black markings about on the submarginal wavy line interiorly and with the claviform, large and very dark, give to these individuals a very different appearance from that of *tritici*. The hindwings are of a brownish grey with a whitish fringe and in both sexes; there is a distinct cellular lunule. One specimen somewhat resembles *A. distinguenda*, Ld. but it cannot be that, since the antennae are much more shortly pectinated."

Hamp. *Cat. Lep. Ph.* IV. 294, 1903, ab. *varia*, Alph. The costa, fascia, veins and stigmata prominently white.—Cent. Asia; Mongolia; Siberia.

race *obscurior*, Stdgr. *Rom. Mem.* VI. 420 (1892).

ORIG. DESCRIP.—"They are very near the dark ab. *eruta*, Hb., but with the markings of *aquilina*." Amur.

race *distincta*, Stdgr. *Iris*, V. 358 (1892).

“A small ♂ 30mm. in expanse belongs to one of the extraordinarily numerous varied forms of *A. tritici*. Among a great number of *tritici* from very varied localities, I have no specimen nor any form with which this Kentei ♂ can be placed. It has bristly or sawlike, short-lashed antennae and narrow forewings, only increasing in width slightly towards the hind margin. They are as brightly marked as in many *tritici* var. *aquilina*, with light costa, light (whitish) upper stigmata, a light (dull grey brown) strongly dentate outer marginal band and a distinct white median vein. Specimens with similarly brilliant markings, but far wider forewings, which are very much larger, and have male antennae tolerably strongly comblike, I have in numbers from Amasia and Sarepta sent to me as var. *distincta*. Of this form the males have almost entirely white hind-wings with dark discal line, these in the females are pretty strongly grey in the outer half.”

Hamps. *Cat. Lep. Ph.* IV. 294 (1903). Large; markings prominent, bright; hindwing white; antennae thick.—S. Russia; Pontus.

Euxoa tritici, L. var. *siepii*, Obthr. *Bull. Soc. ent. Fr.* (27) (1907).

“Characterised by the uniform grey-brown tone of the superior wings and by its two much emphasized black lines, the subbasal and the elbowed, crossing almost perpendicularly from the costa to the inner margin. These two lines are formed by a series of little dashes of a jet black, making an uninterrupted line, except immediately below the costal margin. In one specimen on the right upper wing, these two lines are extended along the internal border, by a black streak more or less thickened at its two ends.” Plan d’Aups, S. France.

ab. *fumosoides*, Culot. (Obthr. in l.), *N. et G.* I(1). 78 (1909-13).

FIG.—*l.c.* pl. 12. f. 15.

ORIG. DESCRIP.—“Nom qui convient très bien à sa coloration enfumée.” The figure is of a general smoky-brown coloration with no light markings whatever other than shades of smoky-brown. The transverse line next beyond the stigmata is black and the most conspicuous feature, emphasized on the outside by a thin lighter brown edging line. Other usual features are slightly or partially emphasized by black, the orbicular, reniform, 2nd line, sagittate marks, etc. No suggestion of the usual variegated appearance of this species. Coast of Brittany.

f. *donzelii*, Bng.-Hs. *Iris*, XXIV. 37 (1910).

FIG.—Plt. iii. f. 9.

ORIG. DESCRIP.—“Forewings yellow-grey, slightly powdered blackish, with small sharply margined basal area from the costa to just before the inner margin. The disc, with the stigmata large, somewhat brighter grey coloured orbicular and reniform (the claviform is completely wanting) is defined by very sharp black lines, the inner commencing almost at right angles becomes more or less curved; the outer is strongly bent and is emphasized by extraordinary sharp toothed marking. The marginal area with a clearer angulated line and containing darker scaled sagittate spots partly-obsolete. The

marginal line is whitish grey in one of the two specimens lying before me with slight black discoidal, which in the other example is wholly wanting. The hindwing in one is wholly white, in the other a slight grey powdering on the margin." Digne.

f. *wagneri*, Corti, *Schw. ent. Anz.* V. No. 12, p. 3 (1926).

ORIG. DESCRIP.—“ This fine new species comes from Albarracin in Spain. It absolutely agrees with dark examples of *subdistinguenta*, only that tone of colour is much more intense, becoming red towards the margins, but the antennae of the male are not doubly ciliated. The loothing is distinctly stouter than in *tritici*. The upper part only of the antennae is ciliated. A full description is unnecessary here, since I can refer to the figure of *urbana* given in *Iris*, 1922, on pl. xvii. The clear border line on the forewing in *wagneri* is slightly darker, the light costal streak is darker in *wagneri*, violet-brown, whitish powdered, orbicular and reniform also, black outlined. Thorax of the colour of the forewing, abdomen reddish grey. Tarsi black ringed. Underside of the forewings dark suffused, in the middle a shining, mother of pearl, brighter streak, in place of the reniform a dark spot. Hindwing underside white-grey, on the costa powdered straw-grey, a rather distinct discoidal spot is present, which is also distinctly curved on the upperside of the hindwing. But in this character *wagneri* can only doubtfully be distinguished from *subdistinguenta*, in which the discoidal spot as a rule is not visible on the hindwings.” Corti treats this as a true species in Seitz *Supp.* The *urbana* figures in *Iris* suggest the *tritici* complex. The fig. in Seitz. pl. 3 is spoilt by the general colour of the plates.

ab. *falleri*, Schaw. *Zt. Oest. Ent. Ver.* XII. 110 (1927).

FIGS.—*l.c.* 6 text figs. p. 110.

ORIG. DESCRIPTION.—“ Notable on account of the violet to wine-red suffusion, which lies over the dark brown fore-wings and which is especially strong under a lens. This distinguishes it from all other forms. The race is a well marked contrast. Most examples have a more or less clear or dark brown ground colour, deep black basal streak, wholly black-filled claviform stigma, black pyramidal spot, and black sagittate marks on the outer marginal line. The transverse lines in a few specimens are black on the innerside of the outer and the outer side of the inner line. The costa and the middle veins white-grey, as well as the orbicular and reniform stigmata, which are mostly filled in with black. On all the wings there is a violet-red shimmer and gloss.

“ The hind-wings are white and towards the margin becoming more or less grey-brown. In the females the darker outer-margin of the white hind-wings is wider or the whole hind-wing is more grey-brown than white, etc.” S. Corsica.

ab. *pseudogothica*, P. Curt. *Ent. Rec.* XXXIX. 141 (1927).

ORIG. DESCRIP.—*Brit. Noct.* II. 48 as *subgothica*. This was attributed to Haworth but Haworth's *subgothica* has been proved to be an American species *jaculifera*.

race *obeliscata*, Wagnr. (nec Schiff.) *Mitt. Münch.* XIX. 74 (1929).

ORIG. DESCRIP.—“ A quite variegated form which on the one hand

resembles *obelisca*, but on the other hand also resembles *distinguenda* and *subdistinguenda*. The different antennae structure distinguishes it from the two latter." From Turkestan, Naryn.

ab. *falleri-venosa*, Schawrd. *Zt. Oestr. Ent. Ver.* XV. 9 (1930).

ORIG. DESCRIP.—“A ♂ *falleri* in which the normal light-brown ground colour of the forewings and thorax is coloured a light vinous-red. The black markings are normal but less strong. Hindwings normal.” Mt. Ceppo, Corsica.

r. *rubiosa*, Corti.-Stz. *Pal. Noct. Sup.* III. 27 (1931).

FIG.—*l.c.* 3g (type).

ORIG. DESCRIP.—“Usually with very distinct markings, white dentate line behind the sagittate marks, and fairly pale costa.” Central Asia, Issyk-kul, Juldus, Saisan.

NOTE:—Corti remarks (*l.c.* p. 33) “Denominations of aberrations by Tutt and other English authors appear to me absolutely unjustified as they only refer to quite unimportant colour and marking aberrations and cannot be clearly separated from one another.”

race *insulana*, Corti.-Seitz. *Pal. Noct. Sup.* III. 33 (1932).

FIG.—*l.c.* plt. 4e.

ORIG. DESCRIP.—“Red brown, paler costa, with white dots, orbicular and reniform stigmata pale, filled with whitish, encircled by black, the space between the stigmata dark. Claviform stigma dark, subterminal line whitish, sagittate marks usually present. Hindwings white, dusky at margin and on veins.” Isle of Sylt. Great similarity with *agathina*, Dup.

race *reisseri*, Corti.-Seitz. *Pal. Noct. Sup.* III, 33 (1932).

FIG.—*l.c.* plt. 4f.

ORIG. DESCRIP.—“Pale grey-brown, costa paler to whitish. Reniform and orbicular stigmata whitish, cell between them dark, claviform stigma large, brown with dark edge, obliquely downwards from same a pale brown stripe, median nervure whitish, marginal area darker, sagittate marks present. Hindwings pale grey brown with white ground, a dark marginal line, fringes white. Discoidal spot is absent, or exceedingly faint.” Sierra Nevada, Spain.

NOTE:—The enigma of the so-called (*tritici*) *aquilina* seems unsolvable. The continental authorities do not include the British Isles as producing the *aquilina*, Schiff., which has, with the numerous forms attached to it, a very wide range. Culot does not mention the British Isles in describing it, and Corti in Seitz' *Supp.* also does not mention the British Isles. The latest discussion, a very thorough one, of this question, occurs in the *Rev. d'Ent. U.R.S.S.* vol. XXV. p. 288 (1935) by Kozhautshikov, based on over 400 examples from different parts of the Palaearctic Region. This writer states that the items united to *aquilina* form a group characterized in the genus *Euxoa* by (1) bipectinate antennae in the ♂, (2) symmetrical ventral forks of the clasper, (3) cylindrical bursa copulatrix and (4) well defined stigmata. The

following about 40 names of different taxonomic value are included in the 3 subgroups under *aquilina*.

AQUILINA, Schiff., Vienna:—*vitta*, Esp.; *fictilis*, Hb.; *subuletorum*, Bd., S. Ural; *squalida*, Ev., S. Ural; *nigrina*, Stdgr.; *obscurior*, Stdgr., Amur; *oranaria*, B.H., Algiers; *wagneri*, Corti, Pyrenees; *distaxis*, Bours., Thibet; *actinea*, Koth., Naryn; *vinosa*, Schaw., Corsica; *punctifera*, Corti., S. Ural; *terrestris*, Corti., S. Ural; *rabiosa*, Corti; *quassa*, Corti., Anatolia; *schwingenschussi*, Corti., Pyrenees.

DISTINGUENDA, Ld., Alps:—*christophi*, Stdgr., Sarepta; *lugens*, Stdgr., Sarepta; *distincta*, Stdgr.; *siepii*, Obthr., Alps; *donzelii*, B.H., Alps; *provincialis*, Brs., Alps; *cleui*, Brs., Alps; *astfelleri*, Corti., S. Alps; *uralensis*, Corti., Ural; *praevisa*, Brs., S. Alps; *corporea*, Corti., Sarepta; *akshechirensis*, Corti., As. Min; *praedistincta*, Zerny, Lebanon.

RUGIFRONS, Mab., Algiers:—*bledi*, Christ., Algiers; *urbana*, B.H., Algiers.

MENDELIS, Fernadz, Udes:—*identata*, Frdz., Udes; *deleta*, Frdz.; *subdistinguenda*, Corti., Spain; *diluta*, Schaw., Aragon; *obscura*, Schaw., Aragon.

We are told that "investigation of the distribution of forms of each group has shown that a relation exists between the geographical distribution and the characters erected for their determination." "One could accept them as subspecies of one and the same species" viz. ssp. *aquilina*, ssp. *distinguenda*, and ssp. *rugifrons* (with *mendelis*). The first is the most widely distributed and phylogenetically the oldest and is more natural to the lower areas; the second is a form natural to more elevated areas, mountains; while the third *rugifrons* is exclusively N. African, but its f. *mendelis* is a Pyrenean race where *distinguenda* does not occur.

Since there really appears to be no basis for uniting our so-called *aquilina* form of *tritici* with the Euro-Asiatic group of forms under *aquilina*, Schiff., with which it has probably been misidentified, readjustment is necessary.

There is little agreement as to what is the form *aquilina*. The more or less accepted view is that it is larger than ordinary *tritici* and of a generally brown coloration without undue emphasis of marking. No figure hitherto published in this country (we must ignore continental figures which appear to represent another species) agrees with this description. Of the specimens in my possession from various localities under the name *aquilina*, a selected series taken by Rev. C. R. N. Burrows in his garden at Mucking in Essex, come nearest. They are generally brown with no tendency of marking to be emphasized by black scales, are of medium size larger than ordinary *tritici*, taken in 1909 and 1910 in company with *tritici* of about the same size. They answer to no continental figure, nor can I match them from between 200 and 300 *tritici* and *aquilina* so called from many British localities. South's figures on pl. 106 (*M.B.I.* I) are much too dark and also have a suppressed red gloss of which the Essex specimens show no trace. This enigma may be solved if some one will breed *tritici* in quantity from many places, especially from the Essex area.

Agrotis, Ochs. (1816-25) Most authors. [*Eueretagrotes*, Smith (1890) : Warr.-Stz ; Corti.-Stz.] *agathina*, Dup. 1827.

Duponchel, *Hist. Nat.* VII. 360., says that Boisduval sent it to him under the name *agathina* ; it had been taken near Montpellier by Dr. Rambur.

Tutt, *Brit. Noct.* I. 58 (1892) : [Smith, *Bull. U.S. Nat. Mus.* No. 38, 47 (1890)] : Barr, *Lep. Br. I.* III. 359, pl. 133, f. 2 (1896) : Stdgr., *Cat. Ed. III.*, 138 (1901) : Hamp. *Lep. Phal.* IV. 644. fig. (1901) : Splr. *Schm. Eur.* I. 147. pl. 32. f. 25 (1905) : South. *Moths Brit. I.* I. 214. pl. 107. f. 2, 3. (1907) : Warr.-Stz. *Pal. Noct.* III. 64. pl. 156 (1909) : Culot. *N. et G.* I. (1). 38. pl. 6. f. 6-10 (1909-13) : Corti-Stz. *Pal. Noct. Sup.* III. 91. pl. 13 (1934).

Dup. *Hist. Nat.*, VII. pl. 122 gives a very good figure of the type "of the colour of wine dregs, with undulated transverse lines."

Freyer, *Neu. Beitr.* VI. fig. 515, gives a rather dull form, with markings much too emphasized ; the ground colour is a lightish brown with a faint suspicion of rosy flush ; there is no differentiation of the costal streak.

The figure in H.-S., *Bearb.* II. pl. 1. f. 2, is quite good, a dark somewhat ruddy form.

Barrett, *l.c.* pl. 133. 3 figs. The figures hardly show the beauty of the British form of this species. The distinctness of marking is not shown.

Spuler., *Schm. Eur.* I. pl. 32. f. 25 (1905) is a very good figure, but rather abnormally large.

South, *Moths Br. I.* pl. 107, gives two fairly good figures, 2 a dark form from Scotland, 3 a slightly pinkish brown form.

Warren-Seitz., *Pal. Noct.* III. 64 pl. 15 (1909), gives a figure of a grey form, rather featureless.

Warren-Seitz, *l.c.* recognized only *hibridicola*, and *scopariae* and treated *lidia*, Bdv. (nec Cram.), *albimacula*, Steph. and *lencographa* as synonyms of the typical name.

Culot, *N. et G.* I. (1), pl. 6, gives 5 figures. (6) a typical form : (7) a var. *rosea*, Tutt : (8) a *provincialis* : (9) a dark form *infuscata* and (10) a very light form *hibridicola*. All very good figures.

Corti.-Seitz, *Pal. Noct. Sup.* III. 91. pl. 13 gives figures of *rosea*, Tutt, *turonica*, Culot, and *scopariae*, Mill. These figures are not over good : *scopariae*, has a black transverse band on the forewing wider on the costa than on the inner margin, with the prominent white dot in the middle ; *rosea* does not show the beautiful rosy tint ; and *turonica* is considerably larger but is rather featureless.

Barrett describes the Variation thus—

"Rather constant in colour and markings except for climatic variations. The colour is more richly pink in the South East of England. In the north, and especially in Scotland, it is intensified into a deep dark purplish-brown, or purplish-black, most of the markings thereby obscured, but the pale subcostal stripe conspicuous though narrower and more curved, uniting with the pale orbicular stigma : the reniform stigma is also paler. The dark race is found as far south as Delamere

Forest, Cheshire, and in some parts of Yorkshire. In the extreme north of Scotland, as at Stornoway, it disappears, and is replaced by pale colouring—pale purplish, pale lilac, or even purplish-white. Irish specimens are of rather full size, and usually of a greyer shade of rosy, but occasionally richly pink."

He reports one "Singularly pale in colour, almost yellowish with a pink tinge." Hill of Howth.

Another, "Of a rich crimson, with the subcostal stripe yellow and the markings very conspicuous." King's Lynn.

Another, "Of a curious pale lilac-grey."

Another, "Of a rich dark purple-brown, much clouded or streaked with deep black, and with the pale subcostal stripe cut short not far from the base."

The List of Forms and Names to be discussed are:—

agathina, Dup. (1827) *Hist. Nat.* VII. 359. plt. 122. 2.

f. *albimacula*, Steph. (1829) *Ill.* II. 137. plt. 19. 3.

f. *leucographa*, Steph. (1829) *l.c.* 199.

lidia, Bdv. (1829) *Ind. Meth.* 63.

ssp. *scopariae*, Mill. (1864) *Icon.* II. 151. plt. 67. f. 7-10.

r. *rosea*, Tutt. (1892) *Brit. Noct.* II. 59. Culot, *l.c.* plt. 6, f. 7.

r. *hibridicola*, Stdgr. (1901) *Cat.* III ed. 138. Culot, *l.c.* plt. 6, f. 10.

r. *provincialis*, (1909-13) Culot. *N. et G.* I (1). 39, plt. 6, f. 8.

ab. *infuscata*, (1909-13) *l.c.* 40, f. 9.

f. *turonica*, Culot. (1922) [Corti.-Stz. *Pal. Noct. Sup.* III. 91. (1934), plt. 13.]

Tutt dealt with (1) the typical form of Duponchel. (2) *scopariae*, an almost black form, with small stigmata and with absence of the transverse line on the lower wings. (3) and *rosea*, the S. of England form with bright rosy tinge.

(f.) ab. *albimacula*, Steph., *Ill.*, II. 137 (1829).

FIG.—*l.c.* plt. 19. f. 3.

ORIG. DESCRIP.—"Alis anticis fusco-brunneis purpureo-variegatis, vittâ costali pallidâ lineolâ basi atrâ, plagâ elongatâ centrali fusco-nigrâ, in quâ macula rotundata alba."

"Antennae griseous; head cinereous with two black spots on the crown; thorax griseous-ash, transversely streaked anteriorly with black and white: anterior wings shining fuscous brown, beautifully shaded with rich purple, with a pale reddish patch at the base, towards the costa; a black streak at the base, with a subocellated purplish spot between its tip and the inner margin, having an ovate black stigmatalike mark adjoining, placed as in most of the Agrotids; on the disc is an elongated fuscous-black patch, acute anteriorly, and truncated posteriorly; in this the anterior stigma, which is round and white is placed, and the posterior one at the hinder extremity; the ordinary strigae are rather obsolete; but in place of the usual hinder one is a series of fuscous dots, united by an interrupted black longitudinal streak to the reniform stigma; the posterior wings dusky ash, and glossy, with a faint transverse striga, and darker border." Whittlesea Mere.

15.x.36.

(f.) ab. *leucographa*, Steph., *Ill.*, II. 199 (1829).

ORIG. DESCRIP.—“ Alis anticis fusco purpureis albo adspersis-maculis ordinariis albidis.”

“ Head and thorax fuscous, with a mixture of fulvous or rufescent; the latter with a transverse dusky streak, followed by a reddish brown one; anterior wings reddish-brown, varied with white and ochraceous-yellow, with fine purplish or coppery shades; at the base is a slightly bifid black streak, reaching nearly to the second striga, which is rather indistinct and very irregular; the third is considerably bent behind the posterior stigma, and is united to the second by a small black hook on the inner margin; between the posterior striga and the hinder margin is a very faint interrupted pale waved striga, bearing a row of elongate-triangular spots on its anterior edge; the space between this striga and the posterior margin is plain purplish-brown, with the nervures slightly ochreous; and on the margin are some indistinct black dots; cilia reddish-ochre; stigmata whitish placed in a dusky or black patch; posterior wings ochreous-white, with a central lunule and two transverse strigae fuscous.” nr. York.

NOTE :—“ Hübner seems to have figured two very distinct insects under the above name.”

lidia, Cr. (Bdv.) *Ind. Method.* 63 (1829).

Bdv. places this name as of a var. of *agathina*, Dup. But drops the *agathina* altogether in the *Index*, 1840 including only the *lidia*, Cr. p. 110.

r. *hebridicola*, Stdgr. *Cat.* IIIed. 138 (1901).

FIG.—Culot. *N. et G.* plt. 6. f. 10 (1909-13).

ORIG. DESCRIP.—“ Al. ant. pallidioribus, grisescentibus, fere non rufo-inspersis.” Hebrides.

r. *provincialis*, Culot (Gn.) *N. et G.* I(1). 39 (1909-13).

FIG.—*l.c.* plt. 6. f. 8.

ORIG. DESCRIP.—“ Distinguished by its small size, and sombre coloration, and the absence of the transverse line of the hind wing.” Provence.

The original specimens were in the Gn. collection and bore his labels.

ab. *infuscata*, Culot (Gn.) *N. et G.* I(1). 40 (1909-13).

FIG.—*l.c.* plt. 6. f. 9.

ORIG. DESCRIP.—“ It is distinguished by a larger size, and its hind wings crossed by a very pronounced band on the light ground.” Scotland.

The original specimen was in the Gn. collection and labelled by him “*infuscata*.”

Of *scopariae*, Mill., Stdgr. says *l.c.*, 138, “ Al. multo obscur., fere nigricantibus.”

f. *turonica*, Culot. [Corti.-Stz. *Pal. Noct.* III. 91 (1934)].

FIG.—Seitz. *l.c.* plt. 13a.

ORIG. DESCRIP.—“ Is a very large, brightly marked form from France.” The figure is far from being brightly marked.

Agrotis, Ochs.-Treit. (1816-25). Many authors. [*Euxoa*, Hb. (1822) Hamp., Warr.-Stz., Meyr.], *corticea*, Schiff. (1775).

Tutt gave Hübner's figure 154 as the type of *corticea*. This was not so; the general opinion is that Schiffermüller's description is the original.

corticea, Schiff. *Verz.* 81 (1775).

ORIG. DESCIP.—“Larvae terricolae. Noctuae rusticae. With black neck-streak. With pale or distinct orbicular and reniform. The bark-coloured small-streak.”

Illiger and Haf. confirm this as *corticea*, *Sys. Verz. Wien. Gegend.* I. 263 (1801).

Tutt, *Brit. Noct.* II. 59 (1892): *Barr. Lep. Br. Is.* III. 295. pl. 126. 1 (1896): *Stdgr. Cat.* II. 151 (1901): *Hamps. Lep. Phal.* IV. 172 (1903): *Splr. Schm. Eur.* I. 162. pl. 35. 16 (1905): *South. Moths. Br. I.* I. 203. pl. 105. 7-8 (1907): *Warr.-Stz. Pal. Noct.* III. 26. pl. 5f. (1909): *Culot, N. et G.* I(1), 83. pl. 13. f. 13-16 (1909-13): *Corti.-Stz. Pal. Noct. Supp.* III. 44. pl. 5g. (1932).

The two fig. 447 in Ernst. and Ingram. *Pap. d'Eur.* (1790), are quite recognizable as *corticea*, but are named *valligera* (?).

Hübner's fig. 154 belongs to the reddish brown group of Tutt, and is uniform in coloration without any irroration.

Haw. *Lep. Brit.* 114 (1806) described both *clavigeris* and *subfuscus* in *Bombyx* at first because of their pectinated antennae. Subsequently when considering the *Noctuae* he included them: see p. 219 (1809).

Treit. *Schm.* V(1). 158, points out that Illiger, *Verz.* (1801). 259 considered *corticea* as a var. of *ravida* and the same as Borkhausen's *assimilans* (*augur*, Hb.), but says that appearance and comparison dispel this view. Subsequently Treit. *l.c.* 159, points out that Esper. *Abbild. (Bombyx.)* III. pl. LXIV. f. 1. (1783) figures the species under the name *exclamationis*.

Godt. *Hist. Nat.* V. pl. 68. 3-4 (1824), gives 2 good figures of dark grey ground.

Wood, *Index.* 33. fig. 127 (1834) is hardly recognizable as *corticea*.

H.-S., *Sys. Bearb.* II. 354. figs. 537, 538, figures two specimens sent to him under different names, the ♂ as *profuga* and the ♀ as *fuscata*, but concludes they are *corticea*. The figure 538 much resembles the *obscura* form of Frr. pl. 628(1).

Freyer. *Neu. Beitr.* VI. Pl. 544, *sincerii*, is very crude and hard; it shows a form with a wide dark central band and no irrorations but with the stigmata and with very conspicuous double transverse lines. On pl. 628 in vol. VII, are two figures, *obscura*. (1) has the whole area from the elbowed line to the base very dark, but the basal half is slightly lighter in shade. (2) has an extremely dark central band. In both the usual stigmata are completely effaced. On the same plate, fig. 3 has the whole of the usual marking strongly emphasized, and fig. 4 is a red brown example with white costal ends of the 3 transverse lines. Pl. 627 has two good typical figures ♂ and ♀; pl. 629. fig. 1 has the four transverse lines white, and fig. 2 is a fuscous form with fuscous markings outlined in black.

Barrett, *l.c.*, plate 126 gives 6 figures including 1b, ♂ with very perfect and emphasized outer transverse line of deep lunules; 1c a black

form, markings obsolescent, base of fore-wings and an outer marginal wide line light grey in contrast; 1d, ♂ light grey, transverse lines obsolescent, 3 stigmata very dark in contrast; 1e, ♀ mottled, outer transverse line double with wide interspace, 2nd line very thick.

South. *Moths Br. I.* I. 203. pl. 105. 7-8 (1907) has two very good figures ♂ and a dark ♀.

Warr.-Stz. *Pal. Noct.* III. 26. pl. 5f. (1909) considers *transversa*, Walk., *fraterna* and *amurensis* as synonyms; he includes most of Tutt's forms and allows the use of *transversa* to one of Tutt's forms. His figures ♂ and ♀ are fairly good and he also figures one of the forms of *obscura*, a dark one but not very dark with a somewhat lighter, subterminal area (*cf.* Frr.)

Culot, *N. et. G.* I(1). pl. 13. figs. 13-16 (1909-13). The ♂ 13 is hardly typical as the transverse lines are totally absent, more like *claviger*, Haw., but well irrorated with black markings especially along the costa, His fig. 15 is that of *irrorata-fusca* and 16 is of the small *corsa* the identity of which as a *corticea* form he appears to query.

Corti-Stz. *Pal. Noct. Sup.* III. 44. pl. 59 (1932), considers *sincerii*, Frr. as a synonym with *transversa*. Walk. and *fraterna* but places *amurensis* as "certainly a genuine sub-species." He figures *amurensis* from China.

Of the Variation Barrett says:—"Variable in the ground colour from very pale brown to ashy-brown, reddish-brown, and smoky black-brown; far more so in the degree of dusting of black scales, which in some specimens is almost totally absent, in others suffuses the whole costal region or even more or less the entire surface of the fore-wings, sometimes forming large blackish clouds, or entirely concealing the brown ground colour; but in almost every instance one of the stigmata, or more particularly the reniform stigma, is conspicuous. Usually the blackness extends in an equal degree to the thorax, but there are striking exceptions.

"The curious whiteness of the shoulder lappets is sometimes observable in paler brown specimens, and of these some have the three stigmata pale and only faintly outlined with black, while others are nearly devoid of the usual transverse lines. These forms seem to occur most frequently near the sea; in Ireland there is sometimes a tendency to more reddish-brown colour. A series from the north-east of Scotland, of beautiful pale grey and brown-grey colour, with the markings unusually distinct—the females darker and much mottled with black."

Barrett describes a Norfolk example, "The forewings are almost wholly black-brown, while the thorax is almost entirely pale brown, except the shoulders which are nearly white."

Other similar specimens in which "the thorax is dark with the shoulder lappets pale and conspicuous."

Also a ♂ "with the fore-wings smoky black, except the hind-margin where is a pale grey stripe, and in which the thorax is black with pale grey shoulders."

An Isle of Wight example "has one half of the fore-wings nearly black, the other—the dorsal half—brown."

Another of a second generation taken in September is of a clear, pale, smooth grey-brown, with sharply dark stigmata."

A Warwickshire example is "pale ochreous-brown, with a strong clouding of deep velvety black, neatly stippled and placed in blotches, throughout the middle of the fore-wing."

On p. 63. *Brit. Noct.* Tutt refers to his *nigra-virgata*. It seems that he should have written *brunnea-virgata*, as the parallel form in the "black" ground forms to that in the "reddish-brown ground" forms.

The Forms and Name to be considered are as follows.—

- corticea*, Schiff. *Verz.* 81 (1775).
corticea, Hb. *Saml. Noct.* 145 (1802).
 ab. *sordida*, Hb. *l.c.* 154.
 f. *clavigerus*, Haw. *Lep. Brit.* 114 (1806).
 ab. *subfuscus*, Haw. *l.c.*
 ab. *sincerii*, Frr. *Neu. Beitr.* VI. 101. pl. 544.2 (1852).
 ab. *obscura*, Frr. *l.c.* VII. 51. pl. 628. 1-2 (1858).
 ssp. *fraterna*, Moore. *Lep. Atk.* 116 (1882).
 ssp. *amurensis*, Stdgr. *Rom. Mem.* VI. 421 (1892).
 ab. *irrorata-pallida*, Tutt, *Brit. Noct.* 62 (1892).
 ab. *virgata-pallida*, Tutt, *l.c.*
 ab. *obsoleta-fusca*, Tutt, *l.c.* 63.
 ab. *irrorata-fusca*, Tutt, *l.c.*
 ab. *brunnea*, Tutt, *l.c.*
 ab. *suffusa-brunnea*, Tutt, *l.c.*
 ab. *brunnea-virgata*, Tutt, *l.c.* 64.
 ab. *venosa*, Tutt, *l.c.*
 ab. *transversa*, Tutt, *l.c.*
 ab. *nigra*, Tutt, *l.c.*
 ab. *costa-irrorata*, Tutt, *l.c.* 62.
 r. *neocomensis*, Roug. *Cat. Lep. Jura.* Plt. I. (1903) [*Vorb. Schm. Schw.* I. 279 (1911)].
 ab. *strigosa*, Strnd. *Arch. Math. og. Nat.* XXV. (1903).
 ssp. *corsa*, Püng. *Iris*, XXI. 286, pl. IV. 2 (1908).
 ab. *obsoleta*, Md.-Wald. *Ent.* XLVIII. 225. fig. (1915).
 ab. *orbiculella*, Strnd. [*Hamp. Lep. Phal.* IV. 172 (1903)] *Arch. Naturg.* LXXXI. A. 12, 143 (1915),
 ab. *nigrovittata*, Hanel, *Int. Ent. Zt.*, XIII. 185 (1925).
 ab. *nigrescens*, Hanel. *l.c.*
 ab. *mulleri*, Hanel. *l.c.*
 ab. *unimaculella*, Masl. *Pols. Pismo. Ent.* II. 130. fig. (1923).
 ab. *pallida*, Schawrd. *Zts. Oestr. Ent.* XV. 9 }
 (1930). } These are forms of
 ab. *obscura*, Schawrd. *l.c.* } the ssp. *corsa*, Püng.

Tutt dealt with the forms

A. Ground colour whitish-grey.

1. Transverse lines more or less obsolete, sometimes entirely so, stigmata distinct, not irrorated with black scales = *clavigerus*, Haw.

2. Trans. lines distinct, stigmata distinct, much irrorated with black scales especially along the costa = *irrorata-pallida*, Tutt.

3. Basal and outer areas black, central area (containing stigmata) pale whitish-grey = *virgata-pallida*, Tutt.

4. Basal and outer areas pale grey, central area black = *sincerii*, Frr.

B. Ground colour fuscous or smoky-grey.

15.xi.36.

1. Trans. lines more or less obsolete, sometimes entirely so, stigmata distinct, not irrorated with black scales = *obsoleta-fusca*, Tutt.

2. Trans. lines and stigmata distinct, much irrorated (especially costal area) with black scales = *irrorata-fusca*, Tutt.

3. Trans. lines and stigmata suffused and almost lost in the unicolorous ground colour = *subfuscus*, Haw.

C. Ground colour reddish-brown.

1. Trans. lines and stigmata distinct, slightly irrorated with black scales = *brunnea*, Tutt.

2. Trans. lines and stigmata distinct, ground colour pale brown, costal area dark reddish-brown = *corticea*, Hb. (the type).

3. Much suffused with black scales, trans. lines and stigmata very indistinct = *suffusa-brunnea*, Tutt.

4. With brown basal and outer areas and black central band = *obscura*, Freyer.

D. Ground colour black.

1. Black, with pale brown extreme outer margin = *brunnea-virgata*, Tutt.

2. Black, with paler veins = *venosa*, Tutt.

3. Black, with pale trans. lines = *transversa*, Tutt.

4. Entirely black, with still more intense stigmata = *nigra*, Tutt.

ssp. *fraterna*, Moore. *Lep. Atk.* 116 (1882).

ORIG. DESCIP.—“Near to *A. corticea*. Male differs in the forewing having a darker costa, darker striae, a more prominent subbasal and antemedial transverse waved black line, and a shorter pointed mark below the cell, a less-defined transverse discal sinuous line, and no submarginal fascia, but a more distinctly formed marginal brown border; and the hindwing is generally paler.

“Female differs in having the medial area between the transverse lines and the outer margin either brown or dark slaty grey, the basal and submarginal areas being much paler.”

Darjiling; Punjab Hills.

ssp. *amurensis*, Stdgr. *Rom. Mem.* VI. 421 (1892).

ORIG. DESCIP.—“My Amur specimens are darker than the European, both females in particular have a wholly dark (wide) middle area of the fore-wing, this is not the case in the dark European examples. One ♂ sent me by Graeser is quite similar to my Vladivostock ♂, only on the costa it is not very dark, and can be included in race *amurensis*.”

Stdgr. *Cat.* IIIed. 151, describes it “Obscurior, saepius al. ant. area media nigricante.”

race *necomensis*, Roug. *Cat. Lep. Jura.* Pl. I (1903).

Vorbrodt *Schm. Schw.* I. 279. “More robust, almost unicolorous, only the three stigmata remain out of the fore-wing markings.” Dombressan, Zermatt, Bul.

ab. *strigosa*, Strand, p. 10. *Arch. Math. og Nat.* XXV (1903).

ORIG. DESCIP.—“The form of this species figured is peculiar in that the transverse line known as the waved line is wholly wanting. Among the 43 specimens in the Christiana Museum there is not a single

one in which this is the case. All have the transverse lines margining the central area not only distinct, but mostly sharply defined. Another constant divergence from the form figured by Hübner, is, that the hindwings do not have the outermarginal band so clearly defined; in the Norwegian examples also the paler basal half becomes so gradually that no constant divisional line can be defined. The hindwings are very commonly equally dark throughout and very seldom as pale as figured in Hübner."

ssp. *corsa*, Püng. *Iris*. XXI. 286 (1908).

FIG.—*l.c.* plt. IV. f. 2.

ORIG. DESCRIP.—"Vein 1 and the middle vein with its branches are all more or less distinctly outlined by lighter colour, and the stigmata are not filled in with dark coloration. In ground it is much greyer than in the type, but there are paler and darker forms of this variation." Corsica.

ab. *obsoleta*, Md.-Wald. *Ent.* XLVIII. 225. fig. (1915).

FIG.—The figure is very obscure.

ORIG. DESCRIP.—"The claviform and orbicular stigmata almost absent." Hever, in a light trap.

ab. *orbiculella*, [Hamp. *Lep. Phal.* IV. 172 (1903)] Strand: *Arch. Naturg.* LXXXI. A. 12. 143 (1915)

ORIG. DESCRIP.—"Fore-wing, with the orbicular large, quadrate, open above."

ab. *nigrovittata*, Hanel. *Int. Ent. Zt.* XIII. 185 (1920)

ORIG. DESCRIP.—"Ground colour yellow brown, area between the inner and outer waved lines dark brown. The darkening reaches the inner margin; the area beyond the subcostal vein before it is yellowish." Dievenow.

ab. *nigrescens*, Hanel. *Int. Ent. Zt.* XIII. 185 (1920)

ORIG. DESCRIP.—"General colour of the fore-wings black-brown with the exception of a fine clear yellow surround of the orbicular and reniform, as well as the submarginal line." Dievenow.

ab. *mülleri*, Hanel. *Int. Ent. Zt.* XIII. 185 (1920)

ORIG. DESCRIP.—"Distinguished by the complete absence of the inner and outer transverse lines on the forewings." Dievenow.

ab. *unimaculata*, Maslow., *Pols. Pismo Ent.* II. 130. fig. (1924).

FIG.—*l.c.* plt. 2. fig. 11. An unrecognizable figure.

ORIG. DESCRIPTION.—"Alae unicoloriter obscuratae macula reniformis unica." ("New Forms of Macrolepidoptera" in Polish by Maslowsky).

ab. *pallida*, Schawd. *Zts. Oestr. Ent.* XV. 9 (1930) [of the ssp. *corsa*]

ORIG. DESCRIP.—"A wholly clear brown, but not yellow, ♂ from Monte Oro. Corsica. The markings are normal, but the specimen stands out from the row by its brown and dark brown appearance."

ab. obscura, Schawd, *Zts. Oëstr. Ent.* XV. 9 (1930) [of the ssp. *corsa*] ORIG. DESCRIP.—“The black brown example in which the lighter transverse lines are wholly obsolescent, might bear the name *ab. obscura*.” Corsica.

Agrotis, Ochs. (1816-25). Many authors. [*Graphiphora*, Ochs. (1816-25), Steph., Meyr.: *Rhyacia*, Hb. (1822), Warr.-Stz.; Corti.-Stz.: *Noctua*, L., (1758) Gn.; Barr.; South: *Coenophila*, Steph.: (1829) South.] *subrosea*, Steph.

Tutt, *Brit. Noct.* II. 59 (1892): Barr. *Lep. Br. I.* IV. 81. plt. 144. 3 (1897): *Stdgr. Cat.* IIed. 80 (1871): *Stdgr. Cat.* IIIed. 135 (1901): *Hamp. Lep. Ph.* IV. 364. fig. (1903): *Splr. Schm. Eur.* I. 143. plt. 32. 6 (1903): *South. Moth. Br. Is.* I. 217. plt. 108. 1 (1907): Warr.-Stz. *Pal. Noct.* III. 36. plt. 7i (1909): *Culot. N. et G.* I(1). 30. plt. III. 12-13 (1909-13): Corti.-Stz. *Pal. Noct. Sup.* III. 63: plt. 8i (1933).

Stephens, *Ill.* II. 128 (1829), described this species under the name *rhomboidea* with a query that it was identical with the *rhomboidea*, Esp. But on p. 200 at the end of Vol. II. he is convinced that it is a new species and gave it the name *subrosea*.

Stephens figure *Ill.* II. plt. XIX, 1, is a very poor representation of the description. At the first glance the rosy colour is conspicuous by its absence.

Wood's *Ind. Ent.* f. 153 (1834), has a very featureless figure, with scarcely a suspicion of the rosy colour.

Humph. and West. *Brit. M.* I. plt. 25 (1842) gives an extraordinary figure, which is strongly erroneous both in colour and shape.

H.-S., *Sys. Bearb.* II. f. 516 (1846) gives a very good figure of the continental blue tinted *subcaerulea* as *subrosea* and in f. 622 gives a figure of the rosy tinted *subrosea* (English), which seems rather too dark generally.

Stdgr. Cat. IIed. 80. (1871), named this fig. 622 to be *subcaerulea* and not *subrosea*. He spelt the name *subcaerulea* and not “*coe*” as quoted by numerous authors.

Barrett, *l.c.* plt. 144. gives 3 figs.

The figures have very little if any “*rosea*” colour about them. 3b is a rich mahogany brown, large in size, with a pale subterminal line, a post-discal crenulated fine line, and light surrounds to the orbicular and reniform; the hind wing also partakes of the rich brown colour.

Spuler. *Schm. Eur.* I. 143. plt. 32. f. 3 (1903) gives a very fair typical figure.

South's fig. on plt. 108. is apparently from an old and faded example. He puts the species in the genus *Noctua* with alternative *Coenophila*.

Warr.-Stz. *Pal. Noct.* III. 36. plt. 7ik. places *rhomboidea*, Steph. as a synonym, and states that the species is extinct in Britain, but that the bluer-grey form occurs in Sweden, Prussia, Russia and Amurland, named ssp. *subcoerulea*, by *Stdgr.* The colours of the figures are not good. The general brown colour of the plate is too apparent. Warr.-Stz. *l.c.* places this species in the genus *Rhyacia*, Hb. and recognized only the form *subcoerulea*, *Stdgr.* On plt. 7i he figures a British ♀

which has a partial reddish brown suffusion, and a *subcaerulea* which is a grey form. (Note the discrepancy of the spelling).

Culot, *N. et G.* I(1) pl. 3. figs. 12, 13 (1909-13) gives a typical figure rather too brown rosy and a figure of f. *subcaerulea* hardly blue enough. The hind wings are naturally large, a feature omitted in some cases. Otherwise the figures are excellent.

Corti-Seitz, *Pal. Noct. Supp.* III 63 (1933), places *subrosea* in the Genus *Rhyacia*, Hb. He recognizes three forms:—a local form *kieferi* from Styria; ab. *latefasciata*, a banded form; and ab. *decipiens*, a melanic form, besides the *subcaerulea* continental bluish grey form.

These authors *l.c.* pl. 8i. figure (1) a British ♂ certainly not rosy in any way. (2) *subcaerulea*, a grey, not blue form. (3) a small very dark form with light transverse lines.

Of the Variation Barrett says—"Slightly variable in the intensity of the ground colour and in the consequent distinctness of the markings. The rosy purple brown colour seems to be a characteristic of British specimens; those obtained from Livonia and Finland, where the species still occurs, being of a pale lilac-grey or purplish-grey, sometimes almost tinged with bluish, hence the varietal name *sub-caerulea*, Stdgr." (H.-S.)

Barrett records an example "Of unusually large size; its fore-wings deep rosy-purple tinged with brown and grey, the clouding before the hind margin forms a conspicuous dark purple band and the stigmata are both distinctly pale; its hind wings are also strongly clouded with grey-brown before the hind-margin."

The Forms and Names to be considered are

subrosea, Steph. (1829), *Ill.* II. 128. 200. pl. 19, 1.

rhomboidea, Steph. (1829) *l.c.*

ssp. *subcaerulea*, Stdgr. (1871), *Cat.* IIed. 80. [H.-S. II. 622. fig.]

ab. *latefasciata*, Huene, *Berlin Ent. Zt.* 311 (1901).

r. *kieferi*, Rbl. (1912), *Verhand z.-b. Gess. Wien.* LXII (118).

ab. *decipiens*, Warnk. (1924), *Int. Ent. Zt.* XVIII. 181.

ssp. *rubrifera*, Warnk. (1930), *Verhand. Hambg.* XXII. 137.

Tutt dealt with (1) the type form, that taken formerly in England, of a slightly rosy tint, and (2) the darker continental form *subcaerulea*, with a slight blue tint.

ab. *latefasciata*, Huene. *Berl. Ent. Zt.* 311 (1901).

ORIG. DESCRIP.—"Very striking is the form of *subcaerulea* in which the central area of the forewing is darkened, the whole width between the praediscal transverse line and the post-discal one and from the costal margin to the inner margin appears as a brownish band, which is so dark, that the brown pyramidal spot between the stigmata is only very slightly apparent." Estland.

var. *kieferi*, Rebel, *Verhand. z.-b. Gessl. Wien.* LXII. (118) (1912).

ORIG. DESCRIP.—"Herr Kiefer sent two specimens of an Agrotid obtained in August at Admont at the electric light. The larger specimen was much worn, the wings somewhat shorter (broader) than in the English typical form and the var. *subcaerulea*. The ground of

the forewing in the fresh (smaller) specimen is tolerably bright red grey and only along the costa slightly dull grey powdered, and agrees better with the typical form than with the northern variety *subcoerulea*. The underside of the two Admont examples differs from both of these forms as it shows no emphasis of the outer curved lines on all the wings, which in *subcoerulea* are particularly distinct."

f. *decipiens*, Warnk. *Int. Ent. Zt.* XVIII. 181 (1924).

ORIG. DESCRIP.—"The forewings are wholly suffused dark red-brown, so that they become unicolorous. The bands and stigmata are only slightly represented, the stigmata as grey scaling. The orbicular lies in a black brown wide longitudinal streak extending to the reniform as it appears in *triangulum* and *ditrapezium*. The hindwings are—at least in the ♀—strongly blackened to the base. The underside of all the wings, especially on the costal margins, is dark red-brown with black suffusion. Thorax the colour of the forewings. Abdomen grey-black." A melanistic form from Hamburg. Bred.

ssp. *rubrifera*, Warnk. *Verhand. Hambg.* XXII. 137 (1930).

ORIG. DESCRIP.—"In comparison with the feebly red English *subrosea*, and the strongly blue suffused eastern *subcaerulea*, the distinctive character of this Lower Elbe (and Holstein) form lies in the more red colour of the forewing, which by a brown ground colour gives it an especially saturated tone. The surround of the orbicular and reniform stigmata is, according to Rebel in his writings on it, filled with black-brown to black. Also the thorax and the sides and termination of the abdomen are as red as the forewings."

"The hindwings are shining, whitish yellow; a blacker marginal shade gives the appearance of a banded hindwing."

Agrotis, Ochs. and Treit. (1816-25), many authors, Meyr. (1897), Corti-Stz. [*Euxoa*, Hb. (1822) Warr.-Seitz, Meyr. (1928): *Feltia*, Wlkr. (1856) Hamp.] *exclamationis*, L. (1758).

De Geer, *Insectes*, II(1), 406 (1771) describes *murina* as follows—

"Phalene à antennes filiformes, à trompe, à ailes croisées d'un gris de fouris avec 4 taches irrégulières noires; à ailes inférieures en partie blanches."

In the German edition this is identified with Schaeffer's pl. 112, f. 1-2 = *exclamationis*.

clavus, Hüfn. *Berl. Mag.* III. p. 298.

ORIG. DESCRIP.—"Brown, grey, with a dark-brown reniform and a nail-shaped spot, which together depict a keyhole." Rottemberg, *Naturf.* VIII. 109 (1766), identifies this as *exclamationis*.

Hüfnagel had named an insect, *l.c.* II. 426, as *clavis*, which was thought to be the ♂ of *clavus*. This, Rottemberg, *l.c.* 109, definitely shows is incorrect. There are two species of different genera. See Goeze, *Beitrag*, III.(3), 46.

Tütt, *Brit. Noct.* II. 64 (1892): Barr. *Lep. Br. Is.* III. 309, pl. 127 (1896): Stögr. *Cat.* III.ed. 148 (1901): Hamp. *Lep. Phal.* IV. 353 (1903): Splr. *Schm. Eur.* I. 158, pl. 34, f. 24 (1905): South,

Moths Br. Is. I. 208, plt. 105, figs. 3-6 (1907) : Warr.-Stz. *Pal. Noct.* III. 34, plt. 7d. (1909) : Culot, *N. et G.* I.(1), 70, plt. 11, 5-8 (1909-13) : Corti-Stz. *Pal. Noct. Sup.* III. 49, plt. 7a (1933).

Schaeffer. *Icones*, II. plt. 112. figured the species poorly (1769).

Esper. *Abbild.* III. 321. plt. 64. f. 2. (1782) names this figure *exclamationis* var. It is very crude and doubtful. Fig. 1 he also calls *exclamationis*, but it is generally considered *corticea* and fig. 2 may be a form of this latter. They both occurred together at the same place. It was treated as a *Bombyx*.

Ernst and Engr. *Pap. d'Eur.* VII. 55. fig. 442 (1790) give 8 figures of *exclamationis*, mostly quite recognizable as that species.

Fab. *Ent. Sys. Emend.* III(2). 70. (1795), in his description says "posticis atris," possibly a slip of the pen, it should read "posticis albis," as pointed out by Esper, etc. and as in Fab. *Spec. Ins.* II. 225. and *Sys. Ent.* 605 previously published.

Hübner's *l.c.* fig. 149 is too blue-grey and as H.-S. says, II. 326, often much yellower. Certainly in the nearly a hundred specimens before me there is a decided generally yellow brown tint throughout. Hübner's fig. 544. *unicolor* is a strikingly yellow-red, sandy form shading to dark at the base, with the claviform absent, the other stigmata unicolorous but outlined by darker lines. No other markings. Treit. *Schn.* V(I). 163 doubts its union with *exclamationis*, or even with *corticea*. I have not met with a specimen in any way resembling it.

Godt. *Hist. Nat.* V. plt. 67. figs. 3-4, show ♂ and ♀ quite well but dark in colour.

Newman, *Brit. M.* 326. f. 2, is the only author which notes the extraordinary aberration which Tutt named *lineolatus*. He did not figure any ordinary forms.

Barrett, *l.c.* plt. 127. 12 figs. 1b. normal coloration with a wide, nearly black, submarginal band, a dark basal area costally : 1c. so dark as to make the black stigmata, etc., almost obsolescent : 1d. generally of a brown somewhat lighter than normal and with markings correspondingly lighter, orbicular very indistinct : 1e. of still lighter ground, reniform and orbicular light centered, top of black claviform united to bottom of reniform by a black connection : 1f. usual ground with all three stigmata united in an irregular black blotch having a light irregular streak internally : 1g. nearly normal with white hind-wings : 1h. somewhat darker ground with all markings except the black claviform outlined in thin lines, hind-wings as dark as the fore-wings : 1j. similar but with absence of about half the normal marking : 1i. normal ground with an excess of clouding around and about most of the markings, hindwing with clouded disc and hind marginal band : 1k. like 1c but with very dark hindwings.

Spuler. *Schn. Eur.* I. plt. 34. f. 24 gives a good figure of the ♂.

Warr.-Stz. *Pal. Noct.* III. 34. plt. 76, treats *pallida*, Tutt, as the same as *serena*, Alph. which he figures. The ♂ is very pale ochreous and the ♀ is pale mouse grey with slight dusky shade in the outer marginal area. Two other figures show a ♂ and a ♀ but the lower wings are too dark, especially of the ♂.

Culot, *N. et G.* I.(1), plt. 11, figs. 5-8, figure 5 a ♂ with only the claviform black, the reniform outlined and the orbicular absent ; 6 a ♂ with black claviform, reniform with centre darkened, orbicular scarcely

traceable; 7 a melanic form, *posteli*; and 8 a fine *cuspidata* form with sagittate discal markings.

Corti-Stz. *Pal. Noct. Sup.* III. 49 (1933), is of opinion that *cuspidata* Culot, should be placed under *plaga*, Steph. and he figures, on pl. 7a, the *serena*, the pale eastern form, which "occurs in similar coloration as an ab. *pallida* in Spain, England, etc.:"

Of the Variation Barrett says—"Variable in almost every respect—in the ground colour from pale drab or pale brownish-grey to deep dark red-brown or even smoky-black. A Cheshire form is almost black, and a Yorkshire form of an extremely dark purple brown. In the grey brown forms there is not unfrequently a mottling of whitish clouds in the middle area of the forewings and a yellowish spot between the two upper stigmata. In all the varieties of ground colouring the transverse lines are usually indistinct, often obsolete; but occasionally very sharply distinct, and when so, they seem to present a most curious appearance of the profile of a sordid and brutalised human face, whereof the claviform stigma is the mouth, the reniform the eye, and the orbicular the nostril. A far prettier variety is produced when the second line is placed somewhat far back and the hind marginal space behind it is clouded with black. The three stigmata, which ordinarily are the only conspicuous markings, are in some instances, in females more particularly, rendered quite obscure, or even almost obliterated; or some are so obscured, leaving only the reniform, or the claviform distinct. A variety (*plaga*) is produced by the union of the black stigmata by means of a black bar or streak, or a black cloud, but this even varies greatly; sometimes a black line connects along the lower edge of the latter to the claviform, in others it passes below the orbicular, uniting the other two; more rarely the orbicular and reniform are fused together, or united higher up, and the claviform left conspicuously separate. The black bar which unites the stigmata in these specimens takes other forms; sometimes it is a small black streak just above the top of the claviform, in others it unites with that stigma only, and broadens or extends it in various ways; or other streaks appear above it, uniting the two upper stigmata as already described, or altering their shape and forming rayed or grade black blotches.

He records a male "Having the transverse lines strongly marked, in which also are three black longitudinal stripes running along nervures, one from the claviform stigma and two from the reniform, all of them very conspicuous and attaining the second transverse line."

Another specimen has "Two large parallel black elongated blotches in the forewings totally concealing the stigmata."

Another "Of a uniform brownish white, without trace of either transverse lines or stigmata, and with scarcely a trace even of the black bar across the front of the collar."

Another "Has its R. forewing extended laterally to double the normal width, the markings thereby rendered smeared and indistinct."

Another "Has an elongated blunt blackish blotch on each side of the median nervure and the subterminal line shifted out of its normal position."

Another "In which the basal portion and the whole space beyond

the second line are dark brown, while the central area is of the usual pale brown."

The Names and Forms to be considered are—

exclamationis, Linn. *Sys. Nat.* Xed. 515 (1758).

clavus, Hüfn. *Berl. Mag.* III. 298 (1766).

murina, De G. *Insectes.* I(1). 406 (1771).

unicolor, Hb. *Saml. Noct.* 544 (1808-18).

picea, Haw. *Lep. Brit.* 220 (1809).

plaga, Steph. *Ill.* III. 388 (1829).

ssp. *serena*, Alph. *Mem. Rom.* V. 137 (1889).

ab. *rufescens*, Tutt (Haw.) *Brit. Noct.* (Lep. Brit.), 66 (220), 1892 (1809).

ab. *brunnea*, Tutt (Haw.) *l.c.*

ab. *pallida*, Tutt *Brit. Noct.* 65 (1892).

ab. *costata*, Tutt (Haw.) *Brit. Noct.* (Lep. Brit.), 65 (219), 1892 (1809),

ab. *obsoleta*, Tutt *l.c.* 66.

ab. *juncta*, Tutt *l.c.* 67.

ab. *lineolatus*, Tutt *l.c.*

ab. *dufranei*, Lamb. *Rev. Mens.* VII. 26 (1907).

ab. *cuspidata*, Culot. *N. et G.* I(1). 70. pl. 11. f. 8 (1909-13).

ab. *posteli*, Culot. *l.c.* figs. 5, 6.

ab. *conjuncta*, Hirsche. *Verh. z. b.* LX. 416 (1910).

ab. *quadrimaculata*, Wehrli. (Vorbt.) *Schw. Scher.* II. 622 (1914).

ab. *wehrlii*, Vorbrdt. *l.c.*

ab. *invertilinea*, Charles. *Cat. Lep. France*, 155 (1926): *Am. Pap.* III. 128. pl. 2. f. 5 (1916).

r. *schwingershussi*, Corti. *Schw. ent. Anz.* 3 (1926). Corti subsequently treated this as a good species near *wagneri* and *aquilina* (Continental). See Seitz. *Pal. Noct. Supp.* III. p. 27. pl. 3i. ♂ type. (Spain).

Of these Tutt dealt with—

A. Ground colour (1) pale whitish grey, distinct marking = *pallida*.

(1a) grey, distinct reddish costa = *costata*.

(2) clear fuscous, central area paler = *exclamationis*.

(3) black grey, markings distinct = *picea*.

(4) clear reddish grey, markings distinct = *rufescens*.

(5) dark reddish brown, markings distinct = *brunnea*.

B. Stigmata. (1) entirely or almost entirely absent = *obsoleta*.

(2) orbicular absent, others distinct = *unicolor*.

(3) orbicular and reniform united = *plaga*.

(4) all united = *juncta*.

(5) See Newman, *Brit. Mths.* p. 326. fig. 1 = *lineolatus*.

ssp. *serena* (Stdgr.) Alph. *Rom. Mem.* V. 137 (1889).

FIG.—Corti.-Stz. *Pal. Noct. Supp.* III. pl. 7a.

ORIG. DESCRIp.—“Of a number of *A. exclamationis* collected at Osch by M. Groum-Grshimailo nearly three quarters belong to this form, which differs from the type by its distinct colour, of a cinereous-grey not suffused with brownish or brown. This form varies much in the distinctness of the marking; while very often the elbowed line is very distinct, very black, or on the other hand, it is only slightly indicated